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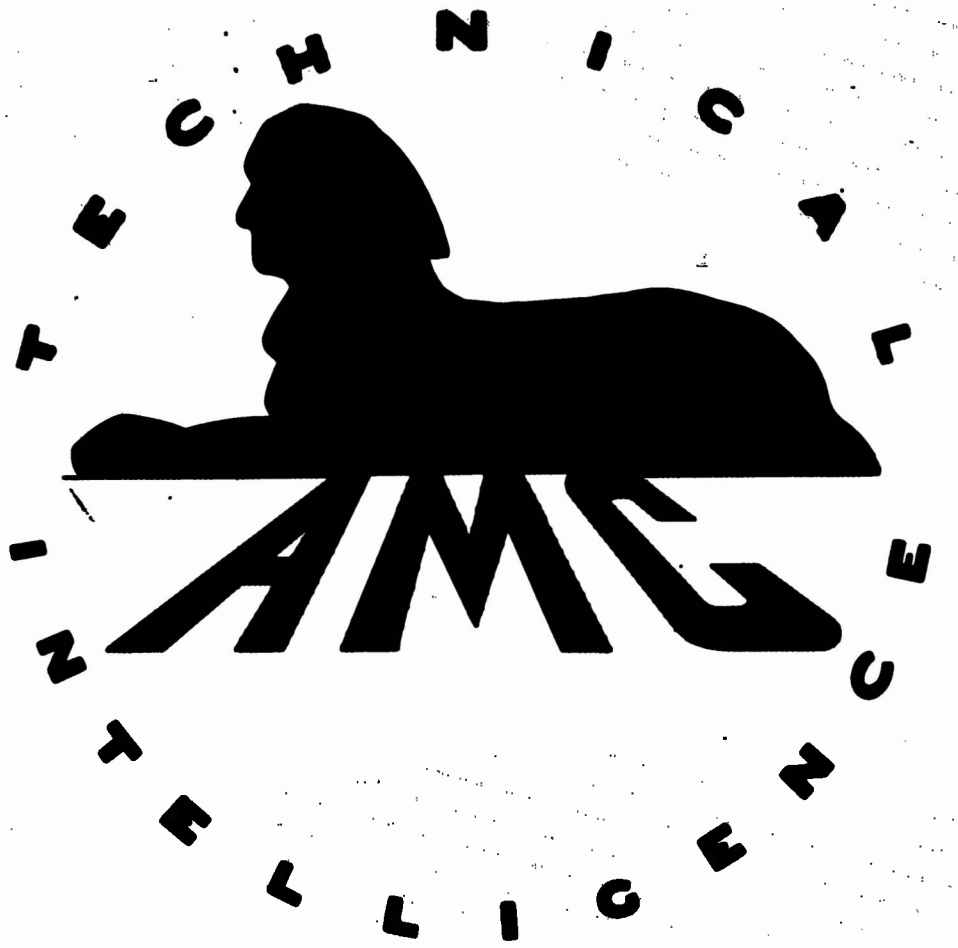

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DIVISION 9
NATIONAL DEFENSE RESEARCH COMMITTEE
of the
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

THE PREPARATION OF SOME COMPOUNDS FOR TESTING AS INSECT REPELLENTS

to
October 31, 1945
by
Melvin S. Newman, Barney Magerlein,
William Wheatley and Lorence Rapaport
Ohio State University

Report OSRD No. 6369*
Copy No. 60
Date: December 28, 1945

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* National Research Council Insect Control Committee Report No. 159.

DIVISION 9
NATIONAL DEFENSE RESEARCH COMMITTEE
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OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

THE PREPARATION OF SOME COMPOUNDS FOR TESTING AS INSECT REPELLENTS

Service Directives CWS-32 and SG-6

Endorsement (1) Dr. Joseph Dee, Technical Aide, Division 9 to Dr. Walter R. Kirner, Chief, Division 9.

Forwarding report and noting:

"This report records the preparation and submittal of 743 organic compounds for testing as insect repellents. The report includes directions for preparation of these compounds, insect repellency data for them and a brief review of the relationship of chemical structure to insect repellency.

"Among the promising candidate insect repellents tested after application to skin O-7021, O-7026, O-7090, O-7102 and O-7145 have "passed" acute toxicity tests (some with reservations) and have been submitted for 90-day subacute toxicity studies. O-7139, O-7209 and O-7227 have passed acute toxicity tests (O-7227 with reservations) but have not been submitted for 90-day subacute toxicity studies. O-7392, O-7430 and O-13058 have been submitted for acute toxicity tests. Forty-five other compounds whose average repellency times ranged from 181 to 433 minutes against A. aegypti have not been submitted for acute toxicity tests.

"Among the compounds tested after impregnation in cloth fourteen were repellent against A. aegypti for more than ten days. Several were still effective after fifteen and twenty days when the tests were terminated.

"When the NDRC, Division 9 program on the preparation of candidate insect repellents was terminated shortly after the end of the war with Japan insect repellency data from the field and further toxicity data were needed to evaluate adequately the promising candidate insect repellents prepared under this contract. Some toxicity studies as indicated above are being made. Additional quantities of some of the promising compounds would have to be prepared for repellency tests in the field and toxicity studies.

"The insect repellency data were obtained by the U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Insects Affecting Man and Animals at Orlando, Florida. The irritancy and toxicity data were obtained by the Food and Drug Administration, Division of Pharmacology in Washington, D.C. and are presented in detail in their reports.

"The studies described in this report were part of a NDRC, Division 9 program (OSRD Formal Reports No. 5285, 6367, 6368, 6369, 6370, and 6371) to find insect repellents more effective than the 6-2-2 mixture used by the Armed Services. The insect repellency data in the aforementioned reports and other insect repellency data are given in reports by the Bureau of Entomology and Plant Quarantine and the Naval Medical Research Institute."

(2) from Dr. Walter R. Kirner, Chief, Division 9 to Mr. Cleveland Morcross, Acting Executive Secretary of the National Defense Research Committee.

Forwarding report with approval.

This is a final report under Contract 9-492, OEMsr-1307 with the Ohio State University Research Foundation.

Table of Contents

Summary and Status of Studies

During the period of our participation in the insect repellant program, from approximately October 9, 1944 to October 31, 1945, seven hundred forty-three compounds have been submitted for repellancy tests to Mr. E. F. Knipling at Orlando, Florida, and to Dr. H. Calvery (and later to Dr. Smith) at Washington, D.C. Of these compounds 90 were submitted from stock and the remaining 653 were synthesized in our laboratory.

Of these 743 compounds, 63 exceeded the minimum repellancy criteria of 180 minutes against aedes aegypti and/or 120 minutes against aades quadrimaculatus. In addition to these, three compounds which did not exceed the minimal values were found to be superior to dimethyl phthalate on paired testing.

Below are listed these compounds with other pertinent facts as indicated by appropriate symbols.

Orlando Code Number O-	Code	Name
7014	BDK	β-(o-Tolyl)-ethyl alcohol
7018	A	5,8-Dimethyl tetralone-1
7021	BDEFGHJ	α-Cyclohexyl-α-cyanoacetic acid, ethyl ester
7026	BDEFHJ	β-Methyl-β-phenylglycidic acid, ethyl ester
7032	B	Hexahydrophthalic acid, diethyl ester
7035	C	1-Naphthonitrile
7039	AN	α-Tetralol
7058	A	Mixture of lactones of 2-hydroxy-1-cyclohexenylacetic acid and 2-hydroxy-1-cyclohexylidenacetic acid
7081	CDK	2-Nitro-2-methyl-1,3-propanodiol, crotonaldehyde acetal
7082	ADK	2-Nitro-2-ethyl-1,3-propanodiol, crotonaldehyde acetal
7085	AN	3-(1-Hydroxycholohexyl)-2-propon-1-ol
7090	ADEFJ	2-Nitro-2-ethyl-1,3-propanediol, butyraldehyde acetal
7102	CDEFGHJ	2-Nitro-2-methyl-1,3-propanediol, butyraldehyde acetal
7121	BDK	Allyl β-methyl-β-phenyl glycidate
7126	C	Undecylenic acid
7139	ADJ	2,5,7-Trimethyl-3-octynediol-2,5
7145	ADEG	N-Butyl-1,2,3,6-tetrahydrophthalimide
7146	BN	Undecylenic acid, N,N-diethyl amide
7147	B	2,5,7-Trimethyl-3-octenediol-2,5
7160	C	β-(1,2,3,4-tetrahydro-5-naphthyl) ethanol
7164	B	2,3-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde oximo
7169	C	β-Ethyl-β-phenylglycidic acid, methyl ester
7178	CN	α-Chloroacetic acid, tetrahydrofurfuryl ester

Orlando Code Number O-	Code	Name
7179	BN	α-Methylepoxycyclohexylidene acetic acid, allyl ester
7187	ADK	α-Cyanoacetic acid, cyclohexyl ester
7209	ADJ	N-Allyl-1,2,3,6-tetrahydrophthalimide
7213	C	p-Chlorophenetole
7219	C	α,β-Dimethyl-β-phenylglycidic acid, methyl ester
7227	BDI	α,β-Dimethyl-β-phenylglycidic acid, propyl ester
7228	C	5-Methyl-5-nitro-2-isopropyl-m-dioxane
7243	A	α-Methylol isobutyrophenone
7289	C	4-Methyl cyclohexanone oxime
7352	C	Methallyl-β-phenoxyethyl ether
7353	C	Methallyl β-benzyloxy ethyl ether
7355	C	α-Methyl-β-phenylglycidic acid, methyl ester
7369	B	N-sec. Butyl-1,2,3,6-tetrahydrophthalimide
7370	C	Cyanoacetic acid, 3-methylcyclohexyl ester
7371	C	Cyanoacetic acid, 4-methylcyclohexyl ester
7373	C	α-Methyl-β-phenylglycidic acid, methallyl ester
7374	B	α-Methyl-β-phenylglycidic acid, allyl ester
7378	C	β-Isopropyl-β-phenylglycidic acid, methyl ester
7383	B	β-Methyl-β-phenylglycidic acid, methallyl ester
7386	B	N-Allyl-4-methyl-1,2,3,6-tetrahydrophthalimide
7392	AD	N-n-propyl-1,2,3,6-tetrahydrophthalimide
7396	A	N-isobutyl-1,2,3,6-tetrahydrophthalimide
7409	A	N-n-Butyl hexahydrophthalimide
7425	B	Cyclohexanone glycerol
7430	AD	Acetophenone glycerol
7434	B	β-Chloropropionic acid, tetrahydrofurfuryl ester
7447	C	N-Allyl-3-methyl-1,2,3,6-tetrahydrophthalimide
13013	A	Methylphenyl acetaldehyde oxime
13015	B	1-Hydroxymethylethynyl-1-cyclohexanol(non-crystalline portion) [O-7079]
13023	A	4,7-Dimethyldecanediol-4,7
13036	B	2,4,7,9-Tetramethyl-1,9-decadienediol-4,7
13039	A	2,3-Octanediol
13058	AD	1,2-Octanediol
13093	A	N-Propyl hexahydrophthalimide
13105	A	N-sec. Butyl hexahydrophthalimide
13108	A	N-Isobutyl hexahydrophthalimide
13138	B	3,6,8-Trimethyl-4-nonynediol- 3,6

Orlando Code Number O-	Code	Name
13155	B	N-Amyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide
13179	L	2,6-Dimethyl-3-isopropyl-4-heptynediol-3,6
13182	L	N-Allyl-4-methyl hexahydrophthalimide
13186	L	N-Isobutyl-4-methyl hexahydrophthalimide
13189	L	N-Isopropyl-4-methyl hexahydrophthalimide
13191	L	2-Cyclohexyl cyclohexanol
10516	BME	3-Methyl-4-methoxy acetophenone
11009	AMD	Cyclohexyl phenyl ketone
11190	AMD	α-Methyl β-phenyl β-hydroxypropionic acid ethyl ester

A repellancy better than DMP (O-262).
B repellancy approximately the same as DMP (O-262).
C repellancy inferior to DMP (O-262).
D 350 g. submitted to Dr. H. Calvery (later Dr. Smith) for acute toxicity studies and 150 g. to Mr. E. F. Knipling.
E 3000 g. submitted to Dr. H. Calvery (Later Dr. Smith) for chronic toxicity studies and 1000 g. to Mr. Knipling for field tests.
F ten one-ounce bottles sent to Dr. Clark H. Yeager, Institute of Inter-American Affairs, for field tests in Central America.
G nine two-ounce bottles sent to Dr. F. J. Spruyt, c/o Insect Control Committee, for over-seas testing.
H 15 g. samples sent to Dr. R. R. Parker, Rocky Mountain Laboratory, Hamilton, Montana, for testing as tick repellants and tick killers.
I failed to pass acute toxicity tests (Calvery) for unrestricted use but warrant further consideration if repellancy is outstanding.
J passed actue toxicity tests (Calvery). Approved for unrestricted use on the skin pending outcome of chronic toxicity studies.
K rejected because of toxicity, irritancy, or both.
L no data on paired testing yet received.
M originally submitted by the University of Illinois.
N amounts ranging from 25 g. to 380 g. sent only to Dr. Calvery.

Of the compounds listed above, I believe the following which have not already been submitted for acute toxicity tests should be submitted for acute toxicity tests:

O-7409	O-13093	O-13186
O-7896	O-13105	O-13189
O-13023	O-13108	O-13191
	O-13155	
	O-13182	

After the outcome of the acute toxicity tests, all of the above compounds that pass should be considered for chronic toxicity tests and field tests.

Relationship of Chemical Structure to Insect Repellant Effectiveness

The question of the effect of structure on insect repellant effectiveness is quite difficult to discuss in any other than a general way because of the difficulty in evaluating insect repellancy and the lack of reliable quantitative data. In the beginning of this work the average repellancy time was taken as an index of repellancy, but later as the paired test data with dimethyl phthalate became more available, it became apparent that probably this paired test data was a better criterion. Even here, however, it is evident that not too much reliance can be placed on numerical values of a few tests.

The brief general review following below is based mainly on the activity against aedes aegypti and on liquid compounds. In discussing promising repellants, consideration of the practicability of commercial production is included in arriving at a conclusion.

Group I - Hydrocarbons

There are no likely candidates in this group.

Group II - Acids and Anhydrides

A number of acids and a few anhydrides have shown some promise as repellants. However, it would appear that acids are in general too irritating for unrestricted use on the skin.

Group III - Aldehydes

No aldehyde offers any great promise. Exposure of certain aldehydes to the air results in increased repellancy.

Group IV - Esters, Lactones

The largest number of effective repellants have been found in the ester group. A carbon content of not less than 8 carbons nor more than 14 is indicated as most desirable.

In a given series of homologous esters the repellancy is usually most marked in one or two of the series and falls off very rapidly with increasing or decreasing carbon content of the ester. For example, if a butyl ester of an acid were effective, it would be most likely that, if a superior ester of this acid were to be discovered, the propyl or amyl ester would be the desired ester, rather than the methyl or heptyl ester.

Although dimethyl phthalate is one of the best repellants, many of the compounds discovered in recent research have not been simple esters. Indeed, it would appear that esters which contain in addition a free hydroxyl group might prove better repellants.

Group V - Ethers and Acetals

Many ethers of the cellosolve type have been examined. While many are good repellants they generally have turned out to be too toxic for unrestricted use. The ether group in conjunction with other functional groups has certain advantages over corresponding compounds lacking the other group. As a whole the other group is not too promising per se. Certain cyclic acetals and ketals seem promising, however, especially when other functional groups, such as hydroxyl or nitro, are present.

Group VI - Ketones

Very few ketones have shown great promise.

Group VII - Alcohols and Phenols

Certain phenols have shown marked repellancy but frequently prove too irritating or toxic. Simple alcohols in general have not proved desirable although there are notable exceptions. However, glycols seem to be one of the most generally active repellant groups. A large number of active glycols have been reported and it would appear that 1,2-, 1,3-, and 1,4-glycols are all active combinations. Such compounds may prove valuable on sweating skin where other repellants fail.

VIIIa - Amides, Imides, Lactams

In this class is the series of compounds that has probably the largest number of active members of any series yet studied, namely, the dialkyl amide esters of dibasic acids. In this class are the cyclic amides of tetra- and hexahydrophthalic acids, a great number of which have phthalate equivalents greater than one. The promising acylated alkylated anilines are also in this group.

VIIIb - Amines

No generally acceptable member of this group has been recorded to date.

VIIIc - Nitriles

Few nitriles have proved generally acceptable. However, cyclohexyl cyanoacetate, O-7187, has the largest phthalate equivalent vs. quads of any compound yet tested. Toxicity experiments show that this compound is not safe for unrestricted use.

VIIId - Nitro compounds

Nitro compounds are in general irritating or toxic. However, O-7090 and O-7102, substituted m-dioxanes prepared from butyraldehyde and nitro diols have passed all irritation and toxicity tests to date and have desirable properties.

VIIIe - Oximes, etc.

Of the few oximes tested a large percentage show desirable properties. A very recent result (only one test) shows that O-13013 phenylmethylacetaldoxime, although possessing less than the required minimum of 180 minutes against aldes aegypti had a phthalate equivalent of 2.5 (first bite) to 1.8 (second bite).

IX - Halogen compounds

Although many halogen compounds have good repellancy, almost none has passed the toxicity and irritancy tests.

Xa - Sulfur compounds

Although sulfur compounds mostly fail to pass toxicity tests, O-5542, thio diglycol diacetate, proved to be the least irritating and toxic of any compound investigated.

Xb - Phosphorus compounds

These appear not to be promising.

General Comment

In view of the discovery of Dr. D. DeLong at Ohio State that humidity factors are important in attracting mosquitoes, it may be hypothesized that one effect of insect repellants is to decrease the humidity in the region of the skin, thereby lessening the attraction for mosquitoes. This may be a partial explanation for the effectiveness of the glycol and hydroxy ester repellants as these compounds would form hydrogen bonds with the surface moisture and thereby decrease the vapor pressure of the water.

A special mention of compound O-7187 should be made. Although this compound exhibited some toxicity in the acute toxicity tests, further work should be done with it because of its high repellancy against A quadrimaculatus. Perhaps testing in a mixture with some other repellant would cut down the toxicity. This compound should be tried in field tests as it might have action against certain insects against which other repellants are not so effective.

REPELLANCY DATA

RESTRICTED

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7000	2 23-62 43			
7001	2 8-33 21			
7002	2 41-53 47			
7003	2 43-43 43			
7004	2 24-54 39			
7005	2 57-77 67			
7006	2 71-91-81			
7007/				
7008/				
7009	2 70-95 83		2 73-96 85	
7010+				
7011+				
7012	2 72-97 85		2 44-73 59	
7013/				
7014	18 168-407 249		18 41-360 149	
7014 DMP	4 214-266 248 4 167-360 279	4 267-324 292 4 203-383 309	4 108-185 153 4 61-331 151	4 137-216 193 4 100-383 189
7015/				
7016	2 56-60 58		2 55-151 103	
7017	2 30-31 31		2 28-31 30	
7018	10 78-387 248		10 21-147 79	
7018 DMP	4 78-311 195 4 23-285 151	4 109-357 332 4 65-329 194	4 21-87 51 4 26-174 80	4 110-165 130 4 68-321 153
7019	4 70-139 118		4 37-134 77	
7020	4 25-193 144		4 24-75 46	

RESTRICTED

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7021 (4999)	38 16-578 201		38 15-161 48	
7021 DMP	8 130-578 367 8 107-489 351	8 161-581 395 8 336-508 403	8 28-93 64 8 79-269 205	8 74-164 117 8 153-380 268
7022	2 70-71 71		2 68-69 69	
7023	2 34-34 34		2 33-33 33	
7024	2 28-40 34		2 28-39 34	
7025	3 32-117 73		3 35-116 64	
7026	37 28-357 165		37 14-169 53	
7026 DMP	8 28-318 192 8 29-392 227	8 143-362 213 8 58-415 217	8 26-146 78 8 31-167 85	8 56-195 103 8 61-294 110
7027	2 39-40 40		2 38-38 38	
7028	2 46-56 51		2 45-55 50	
7029+				
7030+				
7031	2 33-60 47		2 21-33 27	
7032 (5567)	55 27-369 176		53 17-176 56	
7032 DMP	12 94-369 254 12 33-431 269	12 128-400 288 12 97-459 334	12 31-176 87 12 36-358 156	12 64-274 157 12 69-407 239
7033	4 65-137 93		4 64-149 95	
7034+				
7035	5 128-282 182		5 41-135 99	
7035 DMP	1 282 1 399	1 334 1 400	1 55 1 101	1 107 1 153
7036 S	7d	10+d	0d	1d
7037	4 83-157 99		4 37-137 95	
7038+				

Orlando Code Number O-	PROTECTION TIME IN MINUTES (DAYS)+ +Protection time for materials tested on cloth are given in days to the first and fifth bites. A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg	2nd (5th)+ Bite Tests (Min.-Max.-) Avg.
7039 (8705)	6 138-263 175		6 22-62 40	
7039 DMP	2 201-263 232 2 102-181 142	2 281-298 290 2 119-226 173	2 39-62 51 2 60-74 67	2 84-108 96 2 105-118 112
7040	4 72-167 102		2 74-95 85	
7041/				
7042	2 43-80 62			
7043	4 72-133 102		2 67-87 74	
7044	2 29-43 36			
7045	6 18-153 96		4 18-90 46	
7046	2 58-62 60			
7047	2 25-55 40			
7048	4 53-111 83		2 56-68 62	
7049	2 25-57 41			
7050	4 41-93 67		3 17-32 25	
7051	5 19-48 27		2 21-28 25	
7052	4 95-209 124		2 42-42 42	
7053	2 21-70 46			
7054+				
7055	2 61-104 83			
7056+				
7057	2 1-7 4			
7058	4 198-454 295		6 46-251 173	
7058 DMP	4 198-418 306 4 195-246 219	4 304-421 343 4 245-371 291	4 202-291 237 4 200-373 272	4 245-340 286 4 249-415 310
7059	2 76-127 102		2 23-52 43	
7060	2 14-26 20			

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7061	2 65-100 83			
7062	2 28-29 29			
7063	2 6-6 6			
7064	2 27-27 27			
7065	2 24-32 28			
7066	2 61-90 76			
7067	6 89-235 144		4 43-111 74	
7068	2 40-49 45			
7069	2 14-37 25			
7070	2 25-25 25			
7071	2 40-41 41		2 38-39 39	
7072	2 4-35 20			
7073	4 26-87 38		2 32-45 39	
7074+	2d	3d	2d	2d
7075+	3d	5d	1d	1d
7076	2 37-103 70			
7077	2 25-71 48			
7078	2 38-65 52			
7079	4 31-177 83		2 60-70 65	
7080	2 9-95 52			
7081	22 38-447 261		20 22-84 43	
7081 DMP	4 118-378 240 4 210-354 316	4 258-453 356 4 379-461 403	4 24-84 42 4 32-94 50	4 66-128 86 4 127-191 160
7082	15 111-505 365		14 28-146 63	
7082 DMP	4 111-346 278 4 116-348 212	4 296-463 400 4 168-381 275	4 40-120 85 4 30-266 92	4 82-260 155 4 72-296 132

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7083	4 16-120 78		2 20-52 36	
7084	2 1-5 3			
7085	6 214-449 335		6 13-88 55	
7085	4 301-449 388	4 356-449 427	4 37-88 74	4 33-133 119
DMP	4 268-454 346	4 354-454 398	4 45-406 169	4 94-455 238
7086	2 45-64 55		2 7-67 37	
7087	10 22-216 84		8 22-67 39	
7087	6 22-75 44	6 37-155 76	6 22-41 32	6 40-78 57
DMP	6 25-235 116	6 42-289 161	6 27-48 40	6 45-93 65
7088	2 18-20 19			
7089	2 18-18 18			
7090	20 13-472 307		20 15-133 45	
7090	4 441-472 459	4 451-472 463	4 37-133 68	4 72-192 124
DMP	4 303-356 338	4 346-383 372	4 82-308 162	4 140-350 256
7091	2 51-51 51			
7092	2 25-25 25			
7093	2 7-107 57			
7094	2 12-14 13			
7095	2 117-121 119			
7096	2 6-18 12			
7097	2 79-140 111			
7098	2 1-3 2			
7099	3 35-76 57		3 8-80 42	
7100	2 23-39 33		2 22-40 31	
7101 S	Od	Od	Od	Od

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7102	34 24-469 216		34 17-132 46	
7102 DMP	4 210-367 273 4 267-426 337	4 275-440 346 4 313-460 406	4 33-95 59 4 62-206 144	4 83-135 107 4 118-289 226
7103	2 48-69 59		2 9-38 24	
7104 S	0d	0d	0d	0d
7105	2 33-91 62		2 37-61 49	
7106 S	0d	0d	0d	0d
7107 S	1d	1d	0d	0d
7108 S	0d	0d	0d	0d
7109	4d	4d	0d	0d
7110 S (4503)	0d	0d	0d	0d
7111 S (2257)	0d	0d	0d	0d
7112 S	0d	0d	0d	0d
7113 S	0d	0d	0d	0d
7114 S	0d	0d	0d	0d
7115 S	0d	0d	0d	0d
7116 S	0d	0d	0d	0d
7117 S	0d	0d	0d	0d
7118	4 89-165 129		4 12-49 38	
7119	2 45-95 70		2 9-35 22	
7120	4 121-132 127		4 34-83 59	
7121	20 43-429 281		20 23-102 53	
7121 DMP	4 267-409 358 4 267-425 348	4 385-446 422 4 319-460 388	4 26-40 33 4 62-312 149	4 74-117 96 4 118-359 203
7122	2 57-88 73		2 24-25 25	
7123+	3d	3d	0d	1d

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7124+	0d	0d	0d	0d
7125+	3d	5d	0d	3d
7126	22 36-410 199		22 24-145 46	
7126 DMP	8 36-410 155 8 58-236 180	8 127-430 227 8 107-432 215	8 24-62 33 8 30-59 40	8 53-142 78 8 59-104 73
7127	2 50-71 61		2 26-76 51	
7128 S	1d	1d	0d	0d
7129	10+d	10+d	8d	8d
7130	2 46-97 72		2 13-99 56	
7131	2 35-119 77		3 38-80 58	
7132	3 45-87 80		3 48-51 49	
7133	2 71-141 106		2 25-71 48	
7134	2 26-36 56		2 29-71 48	
7135	2 31-32 32		2 36-70 53	
7136	2 39-40 40		2 41-42 42	
7137	2 32-43 38		2 39-44 42	
7138	2 47-87 67		2 32-72 51	
7139	31 32-543 270		31 12-126 41	
7139 DMP	4 344-504 409 4 220-356 308	4 379-507 429 4 271-386 356	4 28-98 50 4 35-197 106	4 78-145 100 4 128-224 178
7140	10+d	10+d	2d	2d
7141	2 16-49 33		2 17-20 19	
7142	2 47-88 68		2 13-63 33	
7143	2 34-47 41		2 37-48 43	
7144	4 96-161 125		4 29-147 84	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7145 (4145)	26 39-467 246		26 14-108 48	
7145 DMP	4 124-466 332 4 124-355 285	4 433-503 467 4 382-435 402	4 26-97 49 4 35-152 87	4 76-144 97 4 86-211 147
7146	10 95-425 188		10 25-73 50	
7146 DMP	4 77-308-154 4 52-246 113	4 111-338 187 4 113-286 241	4 36-50 46 4 42-58 52	4 78-97 85 4 85-114 94
7147	8 130-447 315		8 28-46 36	
7147 DMP	4 162-389 279 4 278-361 303	4 321-420 372 4 326-391 353	4 28-46 37 4 50-94 77	4 72-124 93 4 95-138 122
7148	2 13-63 38		2 12-15 14	
7149/	0d	0d	0d	0d
7150	2 92-120 106		2 27-73 50	
7151	2 41-43 42		2 44-44 44	
7152	2 23-62 43		2 26-26 26	
7153	2 88-104 96		2 19-19 19	
7154	2 34-64 49		2 13-13 13	
7155	2 36-63 55		2 17-39 28	
7156	2 42-45 44		2 45-47 46	
7157	2 11-26 19		2 8-12 10	
7158 S. (234)	0d	0d	0d	0d
7159 S.	10+d	10+d	0d	0d
7160	8 72-149 198		8 26-87 52	
7160 DMP	4 72-159 110 4 122-228 174	4 116-219 179 4 122-228 186	4 20-87 57 4 80-137 109	4 76-130 102 4 125-181 154
7161 S.	1d	1d	0d	0d
7162	2 16-70 43		2 19-22 21	
7163	2 46-48 47		2 47-49 48	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7164	8 133-284 224		8 19-165 79	
7164 DMP	4 205-284 243 4 210-286 262	4 264-325 295 4 270-329 300	4 29-130 67 4 35-225 119	4 73-176 112 4 80-289 168
7165	2 44-79 62		2 10-11 11	
7166	2 61-74 68		2 12-24 18	
7167+	0d	0d	0d	0d
7168	2 74-104 89		2 24-24 24	
7169	10 116-315 216		10 25-90 53	
7169 DMP	6 119-315 235 6 58-367 266	6 175-352 292 6 185-445 330	6 25-49 36 6 37-209 109	6 76-131 98 6 82-272 175
7170	2 75-130 103		2 30-31 31	
7171	2 33-36 35		2 37-38 38	
7172 S	0d	0d	0d	0d
7173	2 22-22 22		2 24-24 24	
7174	2 19-19 19		2 22-22 22	
7175	2 103-103 103		2 16-18 17	
7176	2 8-56 32		2 11-24 18	
7177	2 62-101 82		2 27-63 45	
7178 (7788)	14 121-291 193		16 24-222 82	
7178 DMP	10 159-291 199 10 126-401 263	10 190-328 236 10 218-438 310	10 32-222 81 10 30-288 120	10 63-282 129 10 67-323 166
7179	7 145-395 257		8 15-292 126	
7179 DMP	4 189-395 277 4 291-387 342	4 267-399 338 4 328-464 386	4 86-292 173 4 50-287 164	4 132-330 232 4 94-322 210
7180	2 47-68 58		2 22-23 23	
7181	2 28-68 48		2 30-30 30	
7182	2 48-71 59		2 19-74 47	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7183	2 57-64 61		2 20-21 21	
7184	2 16-83 50		2 18-29 24	
7185	2 14-14 14		2 17-17 17	
7186	2 66-67 67		2 27-28 28	
7187	8 23-375 222		8 25-268 129	
7187 DMP	4 129-324 240 4 129-436 280	4 173-365 288 4 174-464 330	4 42-168 120 4 39-127 66	4 87-280 192 4 91-225 158
7188	2 44-62 53		2 18-47 33	
7190 S	3d	3d	0d	0d
7191 S	3d	3d	0d	0d
7192	2 61-62 62		2 22-23 23	
7193	2 25-29 27		2 27-32 30	
7194	2 29-40 35		2 32-43 38	
7195	2 37-116 77		2 8-9 9	
7196	2 42-44 43		2 15-17 16	
7197 S	3d	3d	0d	0d
7198	2 68-116 92		2 28-31 30	
7199	2 68-69 69		2 32-72 52	
7200	2 19-33 26		2 20-36 28	
7201	2 24-65 45		2 27-27 27	
7202	10 44-181 114		10 23-71 38	
7202 DMP	4 44-139 80 4 40-112 84	4 95-171 124 4 90-176 133	4 23-50 37 4 29-54 40	4 52-99 74 4 59-104 79
7203 S	5d	5d	0d	0d
7204 S (3666)	0d	0d	0d	0d

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Coda Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7205 S	0d	0d	0d	0d
7206+	6d	6d	1d	1d
7207 S (4356)	0d	0d	0d	0d
7208 S	0d	0d	0d	0d
7209	16-141-529 284		16 19-62 35	
7209 DMP	10 141-452 276 10 23-419 187	10 166-472 312 10 111-442 235	10 19-42 28 10 26-49 35	10 50-83 67 10 55-95 75
7210 S	0d	0d	0d	0d
7211+	1d	1d	1d	1d
7212	2 25-100 63		2 36-102 69	
7213/ (1056)	5 21-385 286		5 24-268 147	
7213 DMP	4 321-385 353 4 385-394 390	4 385-446 402 4 388-464 424	4 103-268 178 4 96-320 227	4 177-322 235 4 291-395 297
7214+	1d	1d	1d	1d
7215	10 97-186 134		10 19-116 57	
7215 DMP	4 100-168 136 4 182-442 263	4 125-212 175 4 243-461 334	4 36-54 46 4 50-60 52	4 80-103 94 4 87-110 100
7216	2 23-28 25		2 26-29 28	
7217	2 16-21 19		2 18-22 20	
7218	2 3-45 39		2 36-49 43	
7219	10 120-409 277		10 27-89 44	
7219 DMP	6 185-409 273 6 188-411 328	6 250-431 355 6 264-422 358	6 27-56 41 6 34-60 47	6 72-101 85 6 82-188 112
7220+	1d	1d	1d	1d
7221	2 26-113 70		2 18-29 24	
7222	2 26-115 71		2 27-35 31	

Orlando Code Number O-	PROTECTION TIME IN MINUTES (DAYS)+ +Protection time for materials tested on cloth are given in days to the first and fifth bites. A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7223	6 38-137 118		6 21-55 36	
7224	2 112-112 112		2 31-32 32	
7225	2 26-37 32		2 29-69 49	
7226	6 48-189 99		6 13-58 38	
7227	14 80-411 252		14 25-74 43	
7227	10 80-411 245	10 129-434 301	10 25-74 46	10 70-120 89
DMP	10 42-390 224	10 129-449 310	10 32-171 62	10 87-200 105
7228	10 123-274 210		10 29-71 47	
7228	6 170-253 221	6 231-303 261	6 24-81 44	6 34-126 81
DMP	6 134-323 258	6 264-405 333	6 37-176 79	6 80-203 121
7229	2 44-74 59		2 38-48 43	
7230 (3893)	2 56-64 60		2 16-37 27	
7231+	2d	2d	2d	2d
7232+	0d	0d	0d	0d
7233+	2d	2d	2d	2d
7234+	3d	3d	1d	1d
7235	2 55-58 57		2 29-40 35	
7236	2 52-62 57		2 10-22 16	
7237+	2 60-61 61		2 61-64 63	
7238+	0d	0d	0d	0d
7239+	0d	0d	0d	0d
7240	2 22-24 23		2 24-27 26	
7241	2 87-88 88		2 28-30 29	
7242 S	0d	0d	0d	0d
7243	6 112-396 237		6 22-147 60	
7243	4 170-396 299	4 215-419 357	4 38-53 46	4 82-96 89
DMP	4 56-230 139	4 175-380 272	4 44-58 52	4 89-102 96

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7244 S	1d	1d	0d	0d
7245 S	0d	0d	0d	0d
7246 S	0d	0d	0d	0d
7247	2 13-14 14		2 15-16 16	
7248+	1d	1d	0d	0d
7249+	0d	0d	0d	0d
7250 S	0d	0d	0d	0d
7251 S	0d	0d	0d	0d
7252 S	0d	0d	0d	0d
7253	2 56-61 59		2 16-24 20	
7254	2 8-8 8		2 11-11 11	
7255+	0d	0d	0d	0d
7256 S	0d	0d	0d	0d
7257 S	0d	0d	0d	0d
7258	6 5-88 46		6 6-46 30	
7259 S	0d	0d	0d	0d
7260	2 9-9 9		2 12-12 12	
7261	2 12-15 14		2 15-18 17	
7262+	3d	3d	3d	3d
7263 S	0d	0d	0d	0d
7264	2 18-19 19		2 20-21 21	
7265+	0d	0d	0d	0d
7266	2 36-60 48		2 16-17 17	
7267	2 36-37 37		2 8-9 9	
7268	2 13-15 14		2 16-18 17	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7269	2 16-16 16		2 19-19 19	
7270	2 11-23 17		2 14-26 20	
7271	2 14-14 14		2 15-15 15	
7272	2 9-10 10		2 12-13 13	
7273 S	0d	0d	0d	0d
7274 (13032)	2 64-66 65		2 43-45 44	
7275+	1d	1d	1d	1d
7276	2 56-56 56		2 59-59 59	
7277	2 52-52 52		2 54-55 55	
7278 S	0d	0d	0d	0d
7279	2 13-16 15		2 16-19 18	
7280 S	1d	1d	1d	1d
7281 S	10+d	10+d	0d	0d
7282 S	0d	0d	0d	0d
7283 S	0d	0d	0d	0d
7284 S	0d	0d	0d	0d
7285 S	0d	0d	0d	0d
7286 S	10+d	10+d	1d	1d
7287 S	0d	0d	0d	0d
7288 S	5d	5d	5d	5d
7289 (10543)	12 106-295 187		12 34-108 88	
7289 DMP	4 137-295 221 4 185-338 266	4 179-332 260 4 185-417 302	4 36-76 52 4 64-212 133	4 82-151 104 4 143-243 198
7290	2 20-20 20		2 23-23 23	
7291	2 21-50 36		2 24-24 24	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7292	2 41-43 42		2 44-45 45	
7293	2 50-73 62		2 48-51 50	
7294	2 26-50 38		2 20-29 25	
7295	2 80-88 84		2 16-32 24	
7296	2 13-106 60		2 14-48 31	
7297	2 57-78 68		2 58-61 60	
7298/	3 65-213 125			
7299+	5d	5d	4d	4d
7300+	6d	6d	4d	4d
7301+	7d	7d	4d	4d
7302+	5d	5d	4d	4d
7303+	6d	6d	4d	4d
7304 (7306) (2007)	10 14-65 28		10 15-325 60	
7305	2 24-24 24		2 27-27 27	
7306 (7304) (2007)	10 14-65 28		10 15-325 60	
7307	2 23-26 25		2 26-29 28	
7308+	0d	0d	0d	0d
7309	2 46-103 75		2 30-30 30	
7310	2 85-105 95		2 32-35 34	
7311 S+	0d	0d	0d	0d
7312 S	10+	10+	0d	0d
7313+	0d	0d	0d	0d
7314	2 34-34 34		2 36-36 36	
7315 S	0d	0d	0d	0d

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Codo Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7316	2 26-47 37		2 28-35 32	
7317	2 21-123 75		2 23-24 24	
7318	2 23-82 53		2 26-26 26	
7319 S	0d	0d	0d	0d
7320 S	5d	5d	2d	2d
7321 S	10+	10+D	0d	0d
7322+	0d	0d	0d	0d
7323	2 40-40 40		2 42-43 43	
7324+	0d	0d	0d	0d
7325+	7d	7d	4d	4d
7326+	0d	0d	0d	0d
7327+	2d	2d	0d	0d
7328+	0d	0d	0d	0d
7329+	0d	0d	0d	0d
7330+	0d	0d	0d	
7331	2 36-38 37		2 38-39 39	
7332+				
7333	2 66-86 76		2 47-49 48	
7334	2 30-80 55		2 42-59 51	
7335+	2d	2d	2d	2d
7336+	0d	0d	0d	0d
7337 S	0d	0d	0d	0d
7338	2 24-73 51		2 25-80 53	
7339	2 23-93 58		2 26-26 26	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. Quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. Quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7340	2 21-27 24		2 24-30 27	
7341	2 36-36 36		2 39-39 39	
7342 S	0d	0d	0d	0d
7343	2 33-33 33		2 36-36 36	
7344	2 25-82 55		2 31-86 59	
7345	2 28-74 51		2 31-31 31	
7346	2 26-85 56		2 27-32 30	
7347	2 32-66 49		2 34-67 51	
7348	2 30-83 57		2 33-33 33	
7349+ (2716)	7d	7d	0d	0d
7350	2 109-109 109		2 64-68 66	
7351	2 69-75 72		2 28-33 31	
7352	8 125-313 214		8 32-71 50	
7352 DMP	4 176-313 227 4 180-416 298	4 176-350 263 4 180-416 316	4 32-49 41 4 41-58 50	4 76-94 85 4 86-102 94
7353	8 122-305 194		8 27-71 49	
7353 DMP	4 200-245 216 4 203-297 262	4 209-278 247 4 249-346 305	4 27-59 43 4 33-104 59	4 71-99 85 4 78-147 102
7354	2 86-111 99		2 15-15 15	
7355	12 49-316 185		12 36-127 59	
7355 DMP	8 74-269 209 8 203-386 267	8 204-294 259 8 216-410 302	8 36-77 49 8 43-90 58	8 80-127 94 8 87-141 103
7356	8 33-236 123		8 34-122 68	
7356 DMP	4 33-236 123 4 81-350 215	4 121-301 198 4 239-440 237	4 34-51 44 4 41-58 51	4 79-95 88 4 86-102 95
7357	2 93-138 116		2 44-95 70	
7358 S	0d	0d	0d	0d

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7359	2 57-85 71		2 23-23 23	
7360	2 20-20 20		2 27-23 23	
7361	2 55-56 56		2 24-24 24	
7362	2 12-83 48		2 16-50 33	
7363	2 56-86 71		2 20-21 21	
7364 (5531)	6 79-157 120		6 44-148 86	
7365	7 111-167 127		7 33-65 48	
7365 DMP	4 111-166 134 4 200-304 256	4 166-197 179 4 247-416 313	4 33-46 40 4 40-53 47	4 79-89 84 4 85-96 91
7366 S	Od	Od	Od	Od
7367	2 113-115 114		2 22-25124	
7368 S	Od	Od	Od	Od
7369	5 179-407 287		5 4-60 40	
7369 DMP	1 266 1 206	1 284 1 290	1 39 1 48	1 84 1 93
7370	8 124-272 184		8 31-65 46	
7370 DMP	4 125-238 176 4 176-272 243	4 202-273 246 4 206-297 263	4 31-46 38 4 46-59 52	4 77-91 84 4 91-105 98
7371	8 119-360 226		8 30-58 40	
7371 DMP	4 119-360 218 4 175-309 201	4 166-443 271 4 205-454 306	4 30-46 38 4 46-58 51	4 76-91 83 4 90-104 97
7372	2 79-106 93		2 31-32 32	
7373	8 148-442 237		8 33-76 50	
7373 DMP	4 155-442 256 4 255-334 285	4 193-458 293 4 273-397 319	4 33-45 38 4 41-57 46	4 68-90 80 4 74-103 89
7374	8 51-272 213		8 23-100 50	
7374 DMP	4 164-263 234 4 188-313 241	4 194-324 278 4 253-334 289	4 43-44 34 4 29-57 43	4 68-89 79 4 74-131 99

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2 nd (5th)+ Bite Tests (Min.-Max.) Avg.
7375	2 97-100 99		2 48-51 50	
7376	2 30-80 55		2 32-32 32	
7377	2 18-18 18		2 22-44 33	
7378	8 87-274 169		8 32-71 151	
7378 DMP	4 87-192 131 4 181-277 231	4 164-246 202 4 208-340 261	4 32-44 38 4 40-57 46	4 77-89 83 4 86-102 91
7379 S	Od	Od	Od	Od
7380	2 44-48 46		2 47-49 48	
7381	2 101-103 102		2 47-47 47	
7382	2 47-62 55		2 42-50 46	
7383	8 86-407 250		8 31-90 50	
7383 DMP	4 86-247 193 4 98-267 219	4 254-289 270 4 262-293 279	4 31-45 38 4 38-56 49	4 76-89 83 4 83-104 95
7384	2 69-104 87		2 72-72 72	
7385	2 37-42 40		2 40-44 42	
7386	12 166-488 261		12 23-105 48	
7386 DMP	6 173-371 244 6 55-352 216	6 255-432 300 6 208-415 286	6 30-53 44 6 42-62 53	6 74-100 89 6 85-109 98
7387 S	Od	Od	Od	Od
7388	2 101-111 106		2 46-68 57	
7389	2 41-136 90		2 38-44 41	
7390	2 33-73 55		2 36-76 56	
7391+	10+d	10+d	Od	Od
7392	8 130-514 329		8 33-70 43	
7392 DMP	4 304-422 348 4 92-291 193	4 361-446 400 4 206-376 284	4 34-49 41 4 47-57 52	4 79-95 87 4 92-110 100
7393	2 64-65 65		2 35-36 36	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7394 +	10+d	10+d	0d	0d
7395 S	10+d	10+d	0d	0d
7396	8 113-510 357		8 27-46 35	
7397	4 376-431 403	4 401-453 435	4 28-46 37	4 73-93 83
DMP	4 55-283 203	4 102-430 272	4 49-61 54	4 94-107 100
7397	2 90-164 127		2 27-31 29	
7398	2 58-90 74		2 29-29 29	
7399	2 24-32 28		2 25-35 30	
7400	2 50-115 83		2 54-60 57	
7401	6 113-202 166		6 39-73 57	
7401	4 170-202 185	4 215-237 225	4 39-73 55	4 83-102 81
DMP	4 275-342 309	4 304-387 352	4 44-78 60	4 89-107 96
7402	2 31-61 46		2 30-33 32	
7403	2 57-59 58		2 33-34 34	
7404	2 32-11 72		2 35-63 49	
7405	2 23-31 52		2 26-57 42	
7406/	10+d	10+d	2d	2d
7407	2 66-70 68		2 42-44 43	
7408 S	0d	0d	0d	0d
7409	11 49-446 296		11 27-192 55	
7409	6 208-446 300	6 250-501 403	6 27-54 40	6 72-98 85
DMP	6 222-450 291	6 259-495 345	6 36-65 50	6 81-108 94
7410	2 52-65 59		2 55-66 61	
7411 (1185)	2 44-45 45		2 46-46 46	
7412	2 28-49 39		2 26-50 38	
7413	2 31-63 47		2 35-50 43	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Codo Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7414	4 19-147 86		4 21-53 29	
7415/	6 24-192 107		6 22-42 34	
7415	4 24-139 68	4 48-160 101	4 27-42 35	4 51-72 62
DMP	4 58-121 93	4 58-153 126	4 34-49 42	4 58-79 69
7416	2 13-87 50		2 31-50 41	
7417 S	0d	0d	0d	0d
7418	2 57-95 76		2 26-58 42	
7419 S	0d	0d	0d	0d
7420 S	0d	0d	0d	0d
7421 S	0d	0d	0d	0d
7422	2 21-27 24		2 25-30 28	
7423/	10+d	10+d	0d	0d
7424	2 35-64 50		2 39-40 40	
7425 (7692)	12 21-311 214		12 22-109 55	
7425	4 214-311 269	4 296-373 326	4 26-109 52	4 71-147 94
DMP	4 135-381 292	4 317-404 348	4 34-79 50	4 79-120 93
7426	2 34-80 57		2 39-39 39	
7427	2 39-79 59		2 36-40 39	
7428 S	0d	0d	0d	0d
7429	2 47-47 47		2 50-50 50	
7430	10 168-306 242		10 13-51 35	
7430	4 172-306 304	4 316-443 396	4 35-51 43	4 79-94 87
DMP	4 123-366 247	4 243-399 304	4 39-57 48	4 84-100 93
7431 S	0d	0d	0d	0d
7432	2 29-64 47		2 26-30 28	
7433	4 13-169 116		4 18-39 27	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Codo Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7434	10 150-276 205		10 21-51 35	
7434 DMP	6 177-276 230 6 85-357 222	6 22-301 264 6 196-384 277	6 33-51 41 6 37-57 46	6 77-96 86 6 82-102 91
7435	4 109-143 119		4 13-117 56	
7436 S	0d	0d	0d	0d
7437 S	0d	0d	0d	0d
7438	2 30-30 30		2 32-33 33	
7439	2 46-109 78		2 49-86 68	
7440	2 42-42 42		2 44-44 44	
7441	2 108-109 109		2 46-84 65	
7442	2 65-65 65		2 30-30 30	
7443	2 79-103 91		2 41-82 62	
7444+	4d	4d	0d	0d
7445	4 91-135 108		4 23-26 25	
7446	2 77-117 97		2 50-79 65	
7447	8 104-387 225		8 21-82 48	
7447 DMP	4 212-387 280 4 196-458 328	4 328-446 379 4 273-487 389	4 34-70 52 4 40-77 58	4 78-98 89 4 85-109 97
7448	2 57-60 59		2 33-44 39	
7449	2 33-62 48		2 36-36 36	
7450	2 83-119 101		2 40-64 52	
7451	2 61-61 61		2 58-62 60	
7452	2 21-142 82		2 24-24 24	
7453	2 42-59 51		2 44-45 45	
7454	2 65-67 66		2 45-97 71	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7455	2 36-37 37		2 39-39 39	
7456	2 57-84 71		2 32-38 35	
7457	2 98-98 98		2 25-33 29	
7458	2 40-68 54		2 41-92 67	
7459	2 66197 82		2 26-50 36	
7460	2 49-76 63		2 27-27 27	
7461	2 71-86 79		2 39-46 43	
7462	2 47-49 48		2 22-24 23	
7463	2 43-44 44		2 46-46 46	
7464	2 20-51 36		2 23-24 24	
7465	2 75-106 91		2 21-30 26	
7466	2 16-76 47		2 19-24 22	
7467	2 23-97 60		2 26-27 27	
7468	2 27-52 40		2 30-30 30	
7469 S	0d	0d	0d	0d
7470	2 61-67 64		2 28-63 46	
7471	2 55-75 65		2 24-29 27	
7472 S	0d	0d	0d	0d
7473				
7474 S	0d	0d	0d	0d
7475 S	0d	0d	0d	0d
7476	2 46-52 49		2 19-29 24	
7477 S	0d	0d	0d	0d
7478 S	0d	0d	0d	0d
7479	2 59-63 61		2 24-63 44	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
7480	2 48-54 51		2 22-25 24	
7481	4 23-185 65		4 23-29 26	
7482/ S	0d	0d	0d	0d
7483	2 85-132 109		2 20-55 38	
7484 S	0d	0d	0d	0d
7485	2 19-51 35		2 22-25 24	
7486	4 42-211 128		4 24-54 38	
7487	2 22-44 33		4 25-37 31	
7488	2 73-96 85		2 24-31 28	
7489	2 18-78 48		2 21-21 21	
7490	2 41-92 67		2 44-45 45	
7491 (6584)	6 41-122 79		6 22-27 24	
7492	2 57-82 70		2 27-60 44	
7493	2 61-69 65		2 64-72 68	
7494	2 22-71 47		2 20-25 23	
7495 S	4d	4d	4d	4d
7496 (6529)	4 29-146 70		4 21-39 32	
7497	2 19-19 19		2 22-22 22	
7498	2 22-44 33		2 24-47 36	
7499	2 43-46 45		2 46-49 48	
13000 S	0d	0d	0d	0d
13001	2 44-44 44		2 47-48 48	
13002	2 44-51 48		2 47-54 51	
13003	2 45-45 45		2 46-46 46	
13004	2 20-30 25		2 23-33 28	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13005+	0d	0d	0d	0d
13006 S	0d	0d	0d	0d
13007+	0d	0d	0d	0d
13008	2 21-33 27		2 24-35 30	
13009+	0d	0d	0d	0d
13010	2 23-23 23		2 26-26 26	
13011	2 46-46 46		2 48-48 48	
13012 S	1d	1d	1d	1d
13013	3 143-237 181		3 27-44 33	
13013 DMP	1 237 1 94	1 267 1 152	1 44 1 53	1 89 1 97
13014	2 21-21 21		2 24-24 24	
13015	6 51-456 217		6 41-64 46	
13015 DMP	4 164-456 298 4 204-420 307	4 191-474 324 4 204-463 326	4 29-50 39 4 40-62 51	4 74-94 84 4 85-106 96
13016 S	0d	0d	0d	0d
13017	2 31-31 31		2 33-33 33	
13018	1 22		1 27	
13019	2 83-108 96		2 25-25 25	
13020 S	0d	0d	0d	0d
13021 S	0d	0d	0d	0d
13022	1 21		1 24	
13023	3 33-288 164		3 36-55 42	
13023 DMP	1 287 1 173	1 287+ 1 219	1 55 1 63	1 85 1 73
13024	2 81-81 81		2 29-29 29	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Codo Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13025	2 17-18 18		2 20-21 21	
13026	2 17-17 17		2 20-20 20	
13027	2 34-61 48		2 37-37 37	
13028	2 19-20 20		2 22-23 23	
13029	2 50-57 54		2 58-60 57	
13030	2 55-100 78		2 58-58 58	
13031	2 53-53 53		2 56-56 56	
13032 (7274)	2 64-66 65		2 43-45 44	
13033	2 66-67 67		2 30-30 30	
13034	2 30-30 30		2 33-33 33	
13035	2 20-23 22		2 23-26 25	
13036	6 61-219 139		6 21-63 38	
13036	4 61-219 135	4 91-291 189	4 22-63 46	4 66-95 80
DMP	4 67-295 145	4 98-361 198	4 30-71 55	4 71-101 87
13037	2 41-67 54		2 44-44 44	
13038	2 23-138 81		2 26-27 27	
13039	4 161-266 214		4 42-94 71	
13039	2 265-266 266	2 295-295 295	2 42-42 42	2 80-87 84
DMP	2 152-271 212	2 242-301 272	2 52-52 52	2 97-97 97
13040 S	Od	Od	Od	Od
13041 S	Od	Od	Od	Od
13042	2 60-180 120		2 29-29 29	
13043	2 51-120 86		2 53-54 54	
13044	2 57-76 67		2 24-31 28	
13045	2 27-34 31		2 30-37 34	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13046	6 27-172 110		6 16-61 40	
13046	4 27-172 100	4 164-220 149	4 16-61 40	4 61-92 77
DMP	4 57-247 158	4 87-297 201	4 32-70 52	4 77-100 89
13047	2 118-119 119		2 45-46 46	
13048	2 25-93 59		2 25-28 27	
13049	2 45-58 52		2 48-61 55	
13050	2 52-65 59		2 55-68 62	
13051	2 46-58 52		2 48-62 55	
13052	1 50		1 53	
13053	2 41-54 48		2 44-57 51	
13054	2 47-60 54		2 50-64 57	
13055/	0d	0d	0d	0d
13056/	0d	0d	0d	0d
13057/	0d	0d	0d	0d
13058	7 110-392 244		7 27-122 50	
13058	5 110-392 267	5 144-468 335	5 27-122 58	5 50-103 98
DMP	5 30-375 224	5 85-395 267	5 33-68 50	5 64-98 86
13059	4 79-176 128		4 18-54 34	
13060	2 82-116 99		2 28-61 45	
13061	4 72-148 104		4 37-151 75	
13062+	0d	0d	0d	0d
13063 S	0d	0d	0d	0d
13064	5 48-153 93		5 32-116 69	
13065	2 64-73 69		2 67-76 72	
13066	3 95-166 129		3 36-120 64	
13067	2 61-70 66		2 64-73 69	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Codo Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13068	10 53-363 158		10 16-71 43	
13068 DMP	4 53-363 214 4 181-434 310	4 220-427 314 4 262-434 347	4 40-56 51 4 50-69 63	4 85-104 97 4 95-119 110
13069	2 57-66 62		2 60-69 65	
13070	2 98-101 100		2 38-42 40	
13071	2 70-83 77		2 73-86 75	
13072 S	0d	0d	0d	0d
13073 S	0d	0d	0d	0d
13074	2 64-108 86		2 21-22 22	
13075 (12129)	4 24-76 60		4 27-34 30	
13076	2 19-21 20		2 22-22 22	
13077	2 16-16 16		2 19-19 19	
13078/	0d	0d	0d	0d
13079+	0d	0d	0d	0d
13080	2 17-32 25		2 20-35 28	
13081 S (6470)	0d	0d	0d	0d
13082	2 72-73 73		2 30-30 30	
13083	2 31-32 32		2 34-36 35	
13084/	0d	0d	0d	0d
13085	2 19-58 39		2 22-60 41	
13086	2 69-71 70		2 28-29 28	
13087	2 77-79 78		2 36-36 36	
13088	2 32-73 53		2 35-35 35	
13089 (11755)	4 45-136 97		4 50-78 66	
13090 S	9d	9d	7d	7d

Orlando Code Number O-	PROTECTION TIME IN MINUTES (DAYS)+ +Protection time for materials tested on cloth are given in days to the first and fifth bites. A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13091 S (6465) (1395)	10+d	10+d	0d	0d
13092 (13151)	4 84-106 82		4 19-67 26	
13093	10 164-428 273		10 30-55 40	
13093 DMP	4 179-428 344 4 61-394 289	4 228-595 460 4 234-424 355	4 39-55 47 4 50-67 59	4 84-102 92 4 95-113 104
13094	2 74-149 112		2 23-39 31	
13095	4 90-168 129		4 31-62 43	
13096	4 51-131 74		4 47-132 72	
13097	2 43-44 44		2 46-48 47	
13098	2 39-73 56		2 42-43 43	
13099	2 38-65 52		2 40-68 54	
13100	2 24-38 31		2 27-41 34	
13101	7 51-168 105		7 27-59 45	
13102	2 43-46 45		2 14-46 30	
13103	2 31-33 32		2 34-34 34	
13104	0d	0d	0d	0d
13105	6 29-504 306		6 32-59 46	
13105 DMP	2 482-584 533 2 394-490 442	2 565-614 589 2 423-514 469	2 41-54 48 2 53-67 60	2 86-100 93 2 98-110 106
13106	2 48-64 56		2 51-67 59	
13107	2 68-86 77		2 55-70 63	
13108	8 151-527 321		8 23-63 44	
13108 DMP	4 260-527 444 4 239-368 325	4 303-571 492 4 217-404 344	4 42-55 49 4 50-67 58	4 83-102 92 4 95-113 104
13109	0d	0d	0d	0d
13110	4d	4d	1d	1d

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13111	Od	Od	Od	Od
13112	2 40-63 56		2 51-66 58	
13113 (2339)	2 42-47 45		2 45-48 47	
13114 (6339)	4 58-103 74		4 47-61 54	
13115	4 139-169 149		4 21-35 25	
13116	2 21-22 22		2 24-25 25	
13117	2 51-111 81		2 26-27 27	
13118	4 100-146 127		4 44-72 61	
13119	2 26-57 42		2 29-30 30	
13120	4 83-200 135		4 22-31 26	
13121	2 45-49 47		2 25-28 27	
13122 (13159)	4 47-77 57		4 20-54 37	
13123	4 52-136 86		4 23-85 54	
13124 S (1396) (6469)	Od	Od	Od	Od
13125	2 15-19 17		2 20-23 22	
13126	2 40-66 53		2 29-43 36	
13127	6 6-167 82		6 9-28 21	
13128	2 52-73 63		2 17-28 23	
13129	2 21-76 49		2 20-23 22	
13130	2 52-100 76		2 24-24 24	
13131	2 23-102 63		2 25-28 27	
13132	2 49-52 51		2 26-51 39	
13133	4 113-156 137		4 22-139 61	
13134	2 20-79 50		2 21-22 22	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13135	2 20-54 41		2 26-30 29	
13136 (11630)	4 21-37 30		4 24-41 33	
13137	4 53-170 119		4 27-58 43	
13138	8 163-354 221		8 25-41 33	
13138 DMP	4 167-354 260 4 174-267 234	4 212-413 295 4 219-297 269	4 34-42 38 4 44-48 46	4 80-87 83 4 85-93 91
13139	2 26-27 27		2 29-29 29	
13140 (13104)	4 50-133 78		4 19-50 31	
13141	2 51-79 65		2 23-23 23	
13142 S (8138)	Od	Od	Od	Od
13143				
13144	4 114-177 153		4 21-60 35	
13145	4 48-180 129		4 14-33 25	
13146				
13147	2 23-53 38		2 26-26 26	
13148				
13149				
13150				
13151 (13092)	4 84-106 82		4 19-67 26	
13152	2 77-117 97		2 19-19 19	
13153	2 53-53 53		2 25-26 26	
13154	4 18-213 71		4 13-25 20	
13155 (1000)	10 198-521 350		8 39-165 73	
13155 DMP	4 256-521 420 4 274-513 385	4 352-521 447 4 330-513 435	4 49-51 50 4 74-328 180	4 95-108 104 4 131-406 270
13156	2 55-72 64		2 26-27 27	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti		A. quadrimaculatus	
	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.	First Bite Tests (Min.-Max.) Avg.	2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13157	2 47-49 48		2 19-19 19	
13158	2 23-81 52		2 24-24 24	
13159 (13122)	4 47-77 57		4 20-54 37	
13160	2 52-74 63		2 16-24 20	
13161	2 55-68 61		2 26-52 39	
13162	2 45-50 48		2 18-23 21	
13163	2 46-78 63		2 20-21 21	
13164 (13140)	4 50-133 78		4 19-50 31	
13165	2 18-19 19		2 21-22 22	
13166	5 13-321 163		5 12-32 18	
13167	2 19-40 30		2 22-25 24	
13168/				
13169	2 21-23 22		2 23-26 25	
13170				
13171	2 45-117 81		2 19-20 20	
13172	2 24-25 25		2 27-28 28	
13173 (2128)	2 64-79 72		2 52-52 52	
13174	2 107-127 117		2 19-20 20	
13175	2 19-77 48		2 19-21 20	
13176	2 52-56 54		2 24-30 27	
13177	2 47-130 89		2 13-20 17	
13178	2 50-109 80		2 21-22 22	
13179	2 77-300 188		2 18-19 19	
13180				
13181	2 18-18 18		2 21-21 21	

PROTECTION TIME IN MINUTES (DAYS)+

+Protection time for materials tested on cloth are given in days to the first and fifth bites.

Orlando Code Number O-	A. aegypti First Bite Tests (Min.-Max.) Avg.	A. aegypti 2nd (5th)+ Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus First Bite Tests (Min.-Max.) Avg.	A. quadrimaculatus 2nd (5th)+ Bite Tests (Min.-Max.) Avg.
13182	3 222-591 418		3 15-24 20	
13183	2 94-94 94		2 22-22 22	
13184	2 16-17 17		2 19-19 19	
13185	2 16-47 32		2 18-20 19	
13186	2 386-417 402		2 16-18 18	
13187	2 16-18 17		2 20-20 20	
13188	2 71-125 98		2 23-44 34	
13189	3 221-504 359		3 20-43 28	
13190	2 107-212 160		2 20-22 21	
13191	3 272-615 433		3 19-49 29	
13192	2 51-56 54		2 18-20 19	
13193	2 88-90 88		2 14-17 16	

13194 to 13208 Not yet tested 10/12 45

Names, Physical Properties, and Methods of Preparation of Candidate Repellants

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
O-7000	2-Phenyl-2-methyl-2-carbmethoxy-cyclopentanol	$C_{14}H_{18}O_3$				A
O-7001	γ-(2-Tetralyl)-butyric acid, methyl ester	$C_{15}H_{20}O_2$				A
O-7002	β-Phenylpropionic acid, methyl ester	$C_{10}H_{12}O_2$				A
O-7003	Methyl cinnamyl ether	$C_{10}H_{12}O_2$				A
O-7004	2-Methyl-2-phenylcyclohexanone	$C_{13}H_{16}O$				A
O-7005	2-Carbethoxycyclopentanone	$C_8H_{12}O_2$				A
O-7006	2-Methyl-2-phenylcyclohexanone	$C_{12}H_{14}O$				A
O-7007	Di-(2-ethoxy-2-n-butyl-n-hexyl) amine	$C_{22}H_{51}O_2N$				A
O-7008	Di-(2-ethoxy-3-methyl-n-amyl) amine	$C_{16}H_{33}O_2N$				A
O-7009	2-Allylcyclohexanone	$C_9H_{14}O$				A
O-7010	Di-(2-ethoxyamyl)amine	$C_{14}H_{31}O_2N$				A
O-7011	α-n-Butyl-β-amino diethyl ether	$C_8H_{19}ON$				A
O-7012	β-Benzoylpropionic acid, ethyl ester	$C_{12}H_{14}O_3$				A
O-7013	α-Phenyl-β-amino diethyl ether	$C_{10}H_{15}ON$				A
O-7014	β-(o-Tolyl)-ethyl alcohol	$C_9H_{12}O$	113-118	9	1.5340	B
O-7015	1,2-Dimethyl-4-bromobenzene	C_8H_9Br				A
O-7016	Trimethylacetic acid, 3-butyne-1-ol ester	$C_9H_{14}O_2$				A
O-7017	Acetic acid, 3-butyne-1-ol ester	$C_6H_8O_2$				A
O-7018	5,8-Dimethyl tetralone-1	$C_{12}H_{14}O$				A
O-7019	γ-(p-xylyl)-butyric acid, ethyl ester	$C_{14}H_{20}O_2$				A
O-7020	α-cyclohexenyl-α-cyanoacetic acid, ethyl ester	$C_{11}H_{15}O_2N$				A
O-7021	α-cyclohexyl-α-cyanoacetic acid, ethyl ester	$C_{11}H_{17}O_2N$	112-116	1	1.4600	C

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
0-7022	Phenyl malonic acid, diethyl ester	$C_{13}H_{16}O_4$				A
0-7023	Cyclopropyl cyanide	C_4H_5N				A
0-7024	Glutaronitrile	$C_5H_6N_2$				A
0-7025	α-Phenylpropionitrile	C_9H_9N				A
0-7026	α-Phenyl-β,γ-epoxybutyric acid, ethyl ester	$C_{12}H_{14}O_3$	109-115	1.5	1.5061	D
0-7027	γ-Butyrolactone	$C_4H_6O_2$				A
0-7028	2-Chloro-p-cymene	$C_{10}H_{13}Cl$				A
0-7029	Hexachloropropene	C_3Cl_6				A
0-7030	2-Fluoro-1,1,1,2,3,3,3-heptachloropropane	C_3Cl_7F				A
0-7031	Hexahydrobenzoic acid, ethyl ester	$C_9H_{16}O_2$				A
0-7032	Hexahydrophthalic acid, diethyl ester	$C_{12}H_{20}O_4$				A
0-7033	1-Bromo-2,4,6-trimethyl benzene	$C_9H_{11}Br$				A
0-7034	1-Bromo-2,4,6-triethyl benzene	$C_{12}H_{17}Br$				A
0-7035	1-Naphthonitrile	$C_{11}H_7N$				A
0-7036	2-Phenylcyclohexanone	$C_{12}H_{15}O$				A
0-7037	Benzoylformic acid, methyl ester	$C_9H_8O_3$				A
0-7038	Trimethylacetic acid,2,2-dimethoxybutyl ester	$C_{11}H_{22}O_4$				A
0-7039	α-Tetralol	$C_{10}H_{12}O$				A
0-7040	Acetic acid, 2-ethyl-2-butyl-1,3-propanediol diester	$C_{13}H_{24}O_4$	87-90	.5	1.4372	E
0-7041	2-Heptynoic acid, propyl ester	$C_{10}H_{16}O_2$	98-9	.5	1.4468	E
0-7042	2-Heptynoic acid, allyl ester	$C_{10}H_{14}O_2$	96-7	.5	1.4581	E
0-7043	Benzoic acid, 3-Butyn-1-yl ester	$C_{11}H_{10}O_2$	82-6	.5	1.5222	F

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
0-7044	3-Octynol-1	$C_8H_{14}O$	88-90	3	1.4559	B
0-7045	Acetic acid, 3 octynol-1 ester	$C_{10}H_{16}O_2$	75-7	3	1.4410	E
0-7046	2-Heptynoic acid, n-amyl ester	$C_{12}H_{20}O_2$	85-8	.5	1.4500	E
0-7047	2-Heptynoic acid, iso-amyl ester	$C_{12}H_{20}O_2$	84-5	.5	1.4488	E
0-7048	Hexahydrobenzoic acid 3-butyn-1-yl ester	$C_{11}H_{16}O_2$	105-9	8	1.4830	F
0-7049	Propionic acid, 2-ethyl-2-butyl-1,3 propanediol diester	$C_{15}H_{28}O_4$	104-10	.5	1.4412	E
0-7050	Butyric acid, 3-octynol-1 ester	$C_{12}H_{20}O_2$	95-6.5	2.5	1.4423	E
0-7051	2-Heptynoic acid, 3-octynol-1 ester	$C_{15}H_{22}O_2$	131-7	1	1.4702	E
0-7052	Cinnamic acid, propargyl ester	$C_{12}H_{20}O_2$	101-4	.5	1.5765	F
0-7053	2-Heptynoic acid, benzyl cellosolve ester	$C_{16}H_{20}O_3$	136-42	.5	1.5070	E
0-7054	2-Heptynoic acid	$C_7H_{10}O_2$	84-7	.5	1.4598	G
0-7055	Benzoic acid, dimethylethynyl carbinol ester	$C_{12}H_{12}O_2$	81-4	.5		H
0-7056	2-Ethyl-2-butyl-1,3-propanediol, butyraldehyde acetal	$C_{13}H_{26}O_2$	109-12	7	1.4430	I
0-7057	Benzoic acid, 1-ethynylcyclohexyl ester	$C_{15}H_{16}O_2$	107-18	.5	1.5437	H
0-7058	Mixture of lactones of 2-hydroxy-1-cyclohexenylacetic acid and 2-hydroxy-1-cyclohexylidene acetic acid	$C_8H_{10}O_2$				A
0-7059	Lactone of 2-hydroxy-1-cyclohexylacetic acid	$C_8H_{12}O_2$				A
0-7060	2-Heptynoic acid, propargyl ester	$C_{10}H_{12}O_2$	101-2	6	1.4669	F
0-7061	2-Ethyl-2-butyl-1,3-propanediol, crotonaldehyde acetal	$C_{13}H_{24}O_2$	122-5	8	1.4580	I
0-7062	2-Ethylhexanoic acid, dimethyl ethynyl carbinol ester	$C_{13}H_{22}O_2$	95-7	9	1.4300	H

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
0-7063	Dodecyne-6	$C_{12}H_{22}$	90-2	10	1.4390	J
0-7064	1-Ethynylcyclohexanol	$C_8H_{12}O$	83-5	19		K
0-7065	2-Heptynoic acid, 3-butynyl	$C_{11}H_{14}O_2$	124-5	9	1.4682	F
0-7066	Acetic acid, 1-hydroxymethyl-ethylethynyl-1-cyclohexanol diester	$C_{13}H_{18}O_4$	98-100	.5	1.4760	L
0-7067	Hexahydrobenzoic acid, dimethylethynylcarbinol ester	$C_{12}H_{18}O_2$	75-80	2	1.4699	H
0-7068	Acetic acid, 1-ethynylcyclohexyl ester	$C_{10}H_{14}O_2$	78-9	8	1.4650	L
0-7069	2-Ethylhexanoic acid, 1-ethynylcyclohexyl ester	$C_{16}H_{26}O_2$	135-8	8	1.4536	H
0-7070	2-Heptynoic acid cyclohexyl ester	$C_{13}H_{20}O_2$	98-100	.5	1.4780	E
0-7071	Propionic acid, 1-hydroxymethylethynyl-1-cyclohexanol diester	$C_{15}H_{22}O_4$	104-6	.5	1.4713	H
0-7072	Dodecanone-6 oxime	$C_{12}H_{25}ON$	144-7	8	1.4552	M
0-7073	Dodecanone-6	$C_{12}H_{24}O$	113-8	8	1.4338	N
0-7074	Acetic acid, 2-octynyl ester	$C_{10}H_{16}O_2$	83-6	3	1.4437	L
0-7075	2-Octynol-1	$C_8H_{14}O$	88-90	8	1.4541	O
0-7076	Cinnamic acid, 3-butyn-1-yl ester	$C_{13}H_{12}O_2$			45	F
0-7077	2-Nitro-2-methyl-1,3-propano diol	$C_4H_9O_4N$			150-3	A
0-7078	2-Nitro-2-ethyl-1,3 propano diol	$C_5H_{11}O_4N$			55-7	A
0-7079	1-Hydroxymethylethynyl-1-cyclohexanol	$C_9H_{14}O_2$			50,4-.8	A
0-7080	Di-(1-hydroxycyclohexyl) acetylene	$C_{14}H_{22}O_2$			107-9	P
0-7081	2-Nitro-2-methyl-1,3-propane-diol, crotonaldehyde acetal	$C_8H_{13}O_4N$	111-14	1	1.4730	I

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
0-7082	2-Nitro-2-ethyl-1,3-propane diol, crotonaldehyde acetal	$C_9H_{15}O_4N$	101-2	.5	1.4713	I
0-7083	Butyric acid, 2-octynyl ester	$C_{12}H_{20}O_2$	104-12	4	1.4460	E
0-7084	Di-(1-acetoxycyclohexyl)-propanol-1	$C_{18}H_{26}O_2$	113-6	.5	1.4868	L
0-7085	3-(1-Hydroxycyclohexyl)-2-propen-1-ol	$C_9H_{16}O_2$	106-9	.5		Q
0-7086	3-(1-Hydroxycyclohexyl)-propanol-1	$C_9H_{18}O_2$	104-5	.5		R
0-7087	Butyric acid, 2-nitro-2-ethyl-1,3-propanediol diester	$C_{13}H_{23}O_6N$	118-22	.5	1.4470	E
0-7088	2-Nitro-2 ethyl-1,3-propane diol, 2-ethylhexanal acetal	$C_{13}H_{25}O_4N$	118-22	.5	1.4589	I
0-7089	2-Nitro-2-ethyl-1,3 propane-diol,2-ethyl-3 propylacrolein acetal	$C_{13}H_{23}O_4N$	110-12	.5	1.4708	I
0-7090	2-Nitro-2-ethyl-1,3 propane-diol, butyraldehyde acetal	$C_9H_{17}O_4N$	98-101	.5	1.4552	I
0-7091	Butyric acid, 2-nitro-2-mothyl-1,3-propanediol diester	$C_{12}H_{21}O_6N$	128-32	1	1.4448	E
0-7092	Acetaldehyde dioctyl mercaptal	$C_{18}H_{38}S_2$	158-60	1	1.4816	S
0-7093	2-Nitro-2-methyl-1,3-propane diol, p-methoxy benzaldehyde	$C_{12}H_{15}O_5N$			127-8	I
0-7094	2-Nitro-2-mothyl-1,3-propano diol, benzaldehyde acetal	$C_{11}H_{13}O_4N$			103-6	I
0-7095	2,5-dimothyl-3-hoxynodiol-2,5	$C_8H_{14}O_2$			94-5	T
0-7096	2-Ethylhexanoic acid, 2-nitro-2-ethyl-1,3-propanediol diester	$C_{21}H_{39}O_6N$	165-7	.5	1.4490	F
0-7097	Benzoic acid, 2-nitro-2-ethyl-1,3-propanediol diester	$C_{19}H_{19}O_6N$			61-3	F
0-7098	2-Nitro-2-ethyl-1,3-propane diol, benzaldehyde acetal	$C_{12}H_{15}O_4N$	135-40	.5	1.5200	I
0-7099	2-Methyl-3,6-endomethylene-1,2,3,6-tetrahydrobenzaldehyde, butanol acetal	$C_{17}H_{30}O_2$	98-105	10	1.4650	I

Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N^{20}_D or m.p.	Method
0-7100	2-Nitro-2-ethyl-1,3-propane diol, p-methoxybenzaldehyde acetal	$C_{21}H_{23}O_4N$			114-16	I
0-7101	Benzoic acid, 2-nitro-2-methyl-1,3-propanediol diester	$C_{18}H_{17}O_6N$			80-82	F
0-7102	2-Nitro-2-methyl-1,3-propano diol, butyraldehyde acetal	$C_8H_{15}O_4N$	92-8	.5	1.4529	I
0-7103	Crotonaldehyde dioctyl mercaptal	$C_{20}H_{40}S_2$	166-71	.5	1.4945	S
0-7104	p-Methoxybenzaldehyde dibenzyl mercaptal	$C_{22}H_{22}OS_2$			74-5	S
0-7105	2-Nitro-2-methyl-1,3-propano diol, 2-ethylhexanal acetal	$C_{21}H_{23}O_4N$	107-10	.5	1.4570	I
0-7106	1-Cyano-2,2,4-trimethylpentanediol-1,3	$C_9H_{17}O_2N$			130-9	A
0-7107	N-Methyl succinimide	$C_5H_7O_2N$				A
0-7108	pseudo-Methyl ester of o-benzoyl benzoic acid	$C_{15}H_{12}O_3$				A
0-7109	N-Methyl-1,2-naphthalimide	$C_{13}H_9O_2N$			166-7	A
0-7110	2-Nitro-2-methyl-1,3-propanediol	$C_4H_9O_4N$			150-3	A
0-7111	2-Nitro-2-ethyl-1,3-propanediol	$C_5H_{11}O_4N$			55-7	A
0-7112	Cinnamic acid, 3-butyn-1-yl ester	$C_{13}H_{12}O_2$			45	F
0-7113	Di(1-hydroxycyclohexyl) acetylene	$C_{14}H_{22}O_2$			107-9	P
0-7114	2-Nitro-2-methyl-1,3-propanediol, benzaldehyde acetal	$C_{11}H_{13}O_4N$			103-6	I
0-7115	2-Nitro-2-methyl-1,3-propano diol, p-methoxybenzaldehyde acetal	$C_{12}H_{15}O_5N$			127-8	I
0-7116	2-Nitro-2-ethyl-1,3-propano diol, p-methoxybenzaldehyde acetal	$C_{13}H_{17}O_5N$			114-6	I
0-7117	Benzoic acid, 2-nitro-2-ethyl-1,3-propanediol diester	$C_{19}H_{19}O_6N$			61-3	E

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
O-7118	2-Nitro-2-methyl-1,3-propane diol, methyl isobutyl ketone ketal	$C_{10}H_{19}O_4N$	84-9	1	1.4561	I
O-7119	Propionic acid, 2,5-dimethyl-3-hexynediol-2,5-diester	$C_{14}H_{22}O_4$	74-5	1	1.4421	F
O-7120	Butyl β-methyl-β-phenyl glycidate	$C_{14}H_{18}O_3$	139-46	5	1.4963	U
O-7121	Allyl β-methyl-β-phenyl glycidate	$C_{13}H_{14}O_3$	134-7	5	1.5262	V
O-7122	Ethyl-β-methyl-β-p-tolyl glycidate	$C_{13}H_{16}O_3$	103-10	.1	1.5291	D
O-7123	Undecylenic acid (heads)	$C_{11}H_{20}O_2$	82-128	7	1.4447	W
O-7124	" " "	$C_{11}H_{20}O_2$	128-32	7	1.4579	W
O-7125	" " "	$C_{11}H_{20}O_2$	132-51	7	1.4561	W
O-7126	" "	$C_{11}H_{20}O_2$	122-3	1	1.4494 (22)	W
O-7127	" " (tails)	$C_{11}H_{20}O_2$	123-50	1	1.4525	W
O-7128	5-Methyl-6,6-dimethylol-1,2,2-bicycloheptene-2	$C_{10}H_{16}O_2$			122-5	X
O-7129	2,2-Dimethylol-3-methyl-1,2,2-bicycloheptane	$C_{10}H_{18}O_2$			107-110	R
O-7130	2-Nitro-2-ethyl-1,3-propane diol, methyl isobutyl ketone ketal	$C_{11}H_{21}O_4N$	107-11	1.5	1.4589	I
O-7131	2-Ethyl-2-buten-1-yl-1,3-propanediol	$C_9H_{18}O_2$	127-31	6	1.4780	X
O-7132	δ-Benzoylvaleric acid, allyl ester	$C_{15}H_{18}O_3$	194-5	7	1.5169	E
O-7133	β-Methyl-β-p-tolyl glycidic acid, isopropyl ester	$C_{14}H_{18}O_3$	102-4	.1	1.4986	D
O-7134	δ-Benzoylvaleric acid, isopropyl ester	$C_{15}H_{20}O_3$	161-2	3	33°	E
O-7135	Ethano 1,1-bis-2-ethylhexyl p-phenoxyacetate	$C_{34}H_{50}O_6$	230-45	.05	1.5170	A
O-7136	Hexahydrobenzoic acid, 2-octynyl-1 ester	$C_{15}H_{24}O_2$	154-162	5	1.4728	V
O-7137	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde, ethanol acetal	$C_{13}H_{24}O_2$	90-6	10	1.4719	I

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
O-7138	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde, allyl acetal	$C_{15}H_{24}O_2$	104-7	11	1.4850	I
O-7139	2,5,7-Trimethyl-3-octynediol-2,5	$C_{11}H_{20}O_2$	98-104	1	1.4605	T
O-7140	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde, butanol acetal	$C_{17}H_{32}O_2$	110-112	10	1.4712	I
O-7141	β-Methyl-β-p-tolyl glycidic acid, benzyl ester	$C_{18}H_{18}O_3$	162-7	.1	1.5558	V
O-7142	Isobutyric acid, 2-nitro-2-ethyl-1,3-propanediol diester	$C_{13}H_{23}C_6N$	128-31	.1	1.4413	E
O-7143	1,1-Dimethylol-2,4-dimethyl cyclohexene-4	$C_{10}H_{18}O_2$	132-4	1	1.4976	X
O-7144	Hexahydrobenzoic acid, 1-ethynylcyclohexyl ester	$C_{15}H_{22}O_2$	107-11	.1	1.4999	H
O-7145	N-Butyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{17}O_2N$	129-31	3	1.5003	Y
O-7146	Undecylenic acid, N,N-diethylamide	$C_{15}H_{29}ON$	127-30	1	1.4618	Z
O-7147	2,5,7-Trimethyl-3-octenediol-2,5	$C_{11}H_{22}O_2$	90-2	.5	1.4601	Q
O-7148	Hexahydrobenzoic acid, 3-octynyl-1 ester	$C_{15}H_{24}O_2$	113-116	.5	1.4738	V
O-7149	Undecylenic acid, N,N-morpholinoamide	$C_{15}H_{27}O_2N$	147-52	.5	1.4840	Z
O-7150	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldohyde oxime	$C_9H_{15}ON$	122-7	12	1.4952	M
O-7151	Acetic acid, 1,1-dimethylol-2,4-dimethylcyclohexene-4 diester	$C_{14}H_{22}O_4$	129-31	.5	1.4693	L
O-7152	α-Keto-α-phenylvaleric acid, ethyl ester	$C_{13}H_{16}O_3$	115-18	1	1.4971	A
O-7153	α-Methyl-β-phenylglycidic acid, methyl ester	$C_{11}H_{12}O_3$	96-101	.5	1.5143	D
O-7154	α-Methyl-β-phenylglycidic acid, benzyl ester	$C_{17}H_{16}O_3$	162-69	.5	1.5674	V

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0-7155	2,3-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde, allyl ester	$C_{15}H_{24}O_2$	128-32	13	1.4730	I
0-7156	" " " , butyl acetal	$C_{17}H_{32}O_2$	124-30	11	1.4712	I
0-7157	" " " , ethyl acetal	$C_{13}H_{24}O_2$	94-101	9	1.4601	I
0-7158	β-Naphthonitrile	$C_{11}H_7N$			65-7	A
0-7159	2,4,7,9-Tetramethyl-5-decynediol-4,7	$C_{14}H_{26}O_2$	102-12	1	59-60	T
0-7160	β-(1,2,3,4-Tetrahydro-5-naphthyl) ethanol	$C_{12}H_{16}O$	116-7	.5	1.5568	AA
0-7161	p-Methoxybenzoic acid, 3-butynyl-1 ester	$C_{12}H_{12}O_3$	123-4	.5	1.5396	F
0-7162	β-Lauroyl tetralin	$C_{22}H_{34}O$	242	1.5	1.5175	A
0-7163	Benzal-9,10-dehydroxystearic acid, butyl ester	$C_{29}H_{48}O_4$	225-30	.1	1.4806	A
0-7164	2,3-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde oxime	$C_9H_{15}ON$	121-24	10	1.4559	M
0-7165	1,1-Dimethylol-2,3-dimethylcyclohexene-4	$C_{10}H_{18}O_2$	122-8	1	1.5052	X
0-7166	α-Methylopoxycyclohexylidene acetic acid, methyl ester	$C_{10}H_{16}O_3$	104-6	6	1.4615	D
0-7167	β-Benzoylpropionic acid, allyl ester	$C_{13}H_{14}O_3$	117-9	.1	1.5243	E
0-7168	α-Methyl-β-phenylglycidic acid, β-phenethyl ester	$C_{18}H_{18}O_3$	167-72	.5	1.5621	V
0-7169	β-Ethyl-α-phenylglycidic acid, methyl ester	$C_{12}H_{14}O_3$	108-12	.5	1.5032	D
0-7170	α-Cyclohexyl-α-cyanoacetic acid, propyl ester	$C_{12}H_{19}O_2N$	104-6	.5	1.4591	V
0-7171	β-(p-Methylbenzoyl)-propionic acid, allyl ester	$C_{14}H_{16}O_3$	153	1.5	1.5250	E
0-7172	β-(p-chlorobenzoyl)-propionic acid, allyl ester	$C_{13}H_{13}O_3Cl$	137-9	.2	43-4	E
0-7173	1,1-Dimethylol-2,4-dimethyl cyclohexane	$C_{10}H_{20}O_2$	119-21	.5	1.4916	Q

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O-7174	α-Cyclohexyl-α-cyanoacetic acid, methyl ester	$C_{10}H_{15}O_2N$	103-5	.5	1.4660	C
O-7175	α-Cyclohexyl-α-cyanoacetic acid, isopropyl ester	$C_{12}H_{19}O_2N$	101-4	.5	1.4557	C
O-7176	o-Chlorophenoxyacetic acid, ethyl ester	$C_{10}H_{11}O_3Cl$	153-4	14	1.5202	A
O-7177	α-Methyl-β-phenylglycidic acid, tetrahydrofurfuryl ester	$C_{15}H_{18}O_4$	154-6	.5	1.5169	D
O-7178	α-Chloroacetic acid, tetrahydrofurfuryl ester	$C_7H_{11}O_3Cl$	92-5	.5	1.4661	E
O-7179	α-Methylepoxy cyclohexylidene acetic acid, allyl ester	$C_{12}H_{18}O_3$	120-24	.5	1.5110	V
O-7180	1,2,3,6-Tetrahydrophthalic acid, monopropyl ester	$C_{11}H_{16}O_4$	140-42	.5	1.4782	AB
O-7181	1,2,3,6-Tetrahydrophthalic acid, monobenzylcellosolve ester	$C_{17}H_{20}O_5$	205-15	.5	1.5203	AB
O-7182	Hexahydrobenzoic acid, methyl ethylothynyl carbinol ester	$C_{13}H_{20}O_2$	113-16	8	1.4638	F
O-7183	α-Methyl-β-phenylglycidic acid, α-phenoxyethyl ester	$C_{18}H_{18}O_4$	178-85	.5	1.5501	V
O-7184	α-Cyclohexyl-α-cyanoacetic acid, allyl ester	$C_{12}H_{17}O_2N$	116-19	.5	1.4662	V
O-7185	α-Cyclohexyl-α-cyanoacetic acid, cyclohexyl ester	$C_{15}H_{23}O_2N$	137-39	.5	1.4805	C
O-7186	α-Ethyl-β-phenylglycidic acid, propyl ester	$C_{14}H_{18}O_3$	119-24	.5	1.5028	V
O-7187	α-Cyanoacetic acid, cyclohexyl ester	$C_9H_{13}O_2N$	103-8	.5	1.4620	E
O-7188	α-Ethyl-β-phenylglycidic acid, isopropyl ester	$C_{14}H_{18}O_3$	107-9	.5	1.4962	D
O-7189	Hexahydrobenzoic acid, methyl isobutylethynyl carbinyl ester	$C_{15}H_{24}O_2$	88-9	.5	1.4627	F
O-7190	N-Benzyl-1,2,3,6-tetrahydrophthalimide	$C_{15}H_{15}O_2N$	175-78	.5	86-8	Y
O-7191	γ-(p-Anisoyl)-propionic acid, allyl ester	$C_{14}H_{16}O_4$			51-2	E

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
0-7192	2,4,7,9-tetramethyl-5-decenediol-4,7	$C_{14}H_{28}O_2$	112-5	.5	1.4610	Q
0-7193	Undecylenic acid, dimethyl-ethynyl carbinyl ester	$C_{16}H_{26}O_2$	108-11	1	1.4486	F
0-7194	3-Octenol-1	$C_8H_{16}O$	87-90	10	1.4428	Q
0-7195	1,2,3,6-Tetrahydrophthalic acid, cyclohexyl ester	$C_{14}H_{20}O_4$	170-80	.5	1.4950	AB
0-7196	1,2,3,6-Tetrahydrophthalic acid, allyl ester	$C_{11}H_{14}C_4$	145-50	1	1.4949	AB
0-7197	Succinamylidene dimethyl malonic ester	$C_9H_{11}O_6$	157-60	.5	81-2	AC
0-7198	[illegible]-Methyl-[illegible]-phenylglycidic acid, 2-ethoxyethyl ester	$C_{14}H_{18}O_4$	123-7	.5	1.4612	V
0-7199	[illegible]-Methyl-[illegible]-phenylglycidic acid, 2-hydroxyethyl ester	$C_{12}H_{14}O_4$	137-41	.5	1.4974	V
0-7200	[illegible]-Methyl-[illegible]-p-methoxyphenyl glycidic acid, methyl ester	$C_{12}H_{14}O_4$	139-43	.5	1.5410	D
0-7201	1,2,3,6-Tetrahydrophthalic acid, tetrahydrofurfuryl ester	$C_{13}H_{14}O_5$	176-80	.5	1.4970	AB
0-7202	[illegible]-Methylepoxycyclohexylidene acetic acid, propyl ester	$C_{12}H_{20}O_3$	109-13	.5	1.4757	V
0-7203	[illegible]-(p-Chlorobenzoyl)-propionic acid	$C_{10}O_9O_3Cl$			130-1	A
0-7204	[illegible]-Benzoyl propionic acid	$C_{10}H_{10}O_3$			114-6	AD
0-7205	[illegible]-(p-Toluoyl)-propionic acid	$C_{11}H_{12}O_3$			119-21	AD
0-7206	2-Methyl-2-benzoyl-1,3-propanediol	$C_{11}H_{14}O_3$	170-80	1	1.5350	AE
0-7207	2,5-Dimethyl-3-hexenediol-2,5	$C_8H_{16}O_2$	70-79	1	1.5550	Q
0-7208	N-Cyclohexyl-1,2,3,6-Tetrahydrophthalimide	$C_{14}H_{19}O_2N$			91-3	Y
0-7209	N-Allyl-1,2,3,6-tetrahydrophthalimide	$C_{11}H_{13}O_2N$	127-9	3	1.5225	Y
0-7210	[illegible]-(p-Anisoyl)-propionic acid	$C_{11}H_{12}O_3$			140-2	AD
0-7211	p-Chloroanisole	C_7H_7OCl	79	10		A

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{20} or m.p.	Method
O-7212	Ethyl-2,4-dichlorophenyl-carbonate	$C_9H_8O_3Cl_2$	98-9	1		A
O-7213	p-Chlorophenetole	C_8H_9OCl	88	10		A
O-7214	2,4-Dichlorophenetole	$C_8H_8OCl_2$	113	10		A
O-7215	Ethyl-p-chlorophenyl carbonate	$C_9H_9O_3Cl$	94-5	1		A
O-7216	2,4-Dimethyl-1,2,3,6-tetra-hydrobenzaldehyde 2-nitro-2-ethyl-1,3-propanediol acetal	$C_{14}H_{23}O_4$	137-9	.5	1.4903	I
O-7217	2,4-Dimethyl-1,2,3,6-tetra-hydrobenzaldehyde, 2-nitro-2-methyl-1,3-propanediol acetal	$C_{13}H_{21}O_4$	135-9	.5	1.4900	I
O-7218	β-Methyl-β-p-methoxyphenyl-glycidic acid, allyl ester	$C_{14}H_{16}O_4$	130-32	.5	1.5179	V
O-7219	α-β-Dimethyl-β-phenyl-glycidic acid, methyl ester	$C_{12}H_{14}O_3$			42	D
O-7220	α-Benzal levulinic acid, methyl ester	$C_{13}H_{14}O_3$	136-40	1	1.5430	AF
O-7221	α-Cyanoacetic acid, 2-ethoxy-ethyl ester	$C_7H_{11}O_3N$	120-22	.5	1.4340	E
O-7222	α-Cyanoacetic acid, benzyl ester	$C_{10}H_9O_2N$	134-6	.5	1.5191	E
O-7223	4-Methylcyclohexyl cyano-acetic acid, ethyl ester	$C_{12}H_{19}O_2N$	110-11	.5	1.4610	C
O-7224	2-Ethylhexylcyanoacetic acid, methyl ester	$C_{12}H_{21}O_2N$	108-9	.5	1.4442	C
O-7225	β-Methyl-β-p-methoxyphenyl-glycidic acid, 2-phenylethyl ester	$C_{19}H_{20}O_4$	195-205	.5	1.5501	V
O-7226	Cyclohexylcyanoacetic acid, 2-ethoxyethyl ester	$C_{12}H_{21}O_3N$	122-4	.5	1.4611	C
O-7227	α,β-Dimethyl-β-phenyl-glycidic acid, propyl ester	$C_{14}H_{18}O_3$	104-8	.5	1.5137	V
O-7228	5-Methyl-5-nitro-2-isopropyl-m-dioxane	$C_8H_{15}O_4N$	98-103	.5	46	I
O-7229	Benzylidene malonic acid, diallyl ester	$C_{16}H_{16}O_4$	144-7	.5	1.5489	AG

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0-7230	Malonic acid, diallyl ester	$C_9H_{12}O_4$	112	9	1.4478	E
0-7231	2-Benzoyl-2-methyl-1,3-propanediol, diacetate	$C_{15}H_{18}O_5$	61-71	1	1.5278	L
0-7232	2-Benzoyl-2-methyl-1,3-propanediol, di-n-butyrate	$C_{19}H_{26}O_5$	48-54	.5	1.5350	E
0-7233	2-Benzoyl-2-methyl-1,3-propanediol, crotonaldehyde acetal	$C_{15}H_{18}O_3$	60-3	1	1.5377	I
0-7234	2-Benzoyl-2-methyl-1,3-propanediol, butyraldehyde acetal	$C_{15}H_{20}O_3$	62-7	1	1.5079	I
0-7235	Malonic acid, dipropyl ester	$C_9H_{16}O_4$	94-6	6	1.4208	E
0-7236	Malonic acid, di-isopropyl ester	$C_9H_{16}O_4$	80-2	5	1.4128	E
0-7237	Benzylidenemalonic acid, dimethyl ester	$C_{12}H_{12}O_4$	134-6	.5	1.5560	AG
0-7238	Benzylidenemalonic acid, dipropyl ester	$C_{16}H_{20}O_4$	134-6	.5	1.5271	AG
0-7239	Benzylidenemalonic acid, di-isopropyl ester	$C_{16}H_{20}O_4$	127-30	.5	1.5197	AG
0-7240	Cyclohexylcyanoacetic acid, benzyl ester	$C_{16}H_{18}O_2N$	162-68	.5	1.5178	C
0-7241	α-Methylepoxy-(4-methylcyclohexylidene)acetic acid, methyl ester	$C_{11}H_{18}O_3$	101-5	4	1.4594	D
0-7242	p-Tolyl allyl sulfone	$C_{10}H_{12}O_2S$			49-51	AH
0-7243	α-Methylol isobutyrophenone	$C_{11}H_{14}O_2$	110-17	1	1.5320	AE
0-7244	2-Oxo-5-phenyl-2,3-dihydrofuran	$C_{10}H_8O_2$			78-83	AI
0-7245	2-Oxo-5-(p-tolyl)-2,3-dihydrofuran	$C_{11}H_{10}O_2$			110-11	AI
0-7246	2-Oxo-5-(p-anisyl)-2,3-dihydrofuran	$C_{11}H_{10}O_3$			104-6	AI
0-7247	α-Benzal levulinic acid, propyl ester	$C_{15}H_{18}O_3$			33-4	AF
0-7248	α-Cyanostyrene	C_9H_7N	67-71	1	1.5564	AJ

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0-7249	bis-(β,β-Ethyl sulfone dipelargonate	$C_{22}H_{42}O_6S$			60-1	A
0-7250	bis-(β,β'-Hydroxyethyl sulfoxide	$C_4H_{10}O_3S$			111-12	A
0-7251	bis-(β,β'-Ethylsulfone dilaurate	$C_{28}H_{54}O_6S$			80-2	AK
0-7252	Benzyl p-tolyl sulfone	$C_{14}H_{14}O_2S$			144-5	AH
0-7253	4-Methyl-2-nitro-3-pentanol	$C_6H_{13}O_3N$	82-4	9	1.4416	AL
0-7254	9,10-Dihydroxystearic acid, chloroacetaldehyde acetal	$C_{20}H_{37}O_4Cl$	235-40	1	1.4671	A
0-7255	4-Oxo-5-nonenoic acid	$C_9H_{14}O_3$	180-85	1	1.5005	AH
0-7256	2-Oxo-5-(p-chlorophenyl)-2,3-dihydrofuran	$C_{10}H_7O_2Cl$			77-80	AI
0-7257	α,α'-Dimethylolbenzyl p-tolyl sulfone	$C_{15}H_{16}O_4S$			113-5	AE
0-7258	α,α'-Dimethylolallyl p-tolyl sulfone	$C_{12}H_{16}O_4S$	143-50	.5	1.5250	AE
0-7259	p-Tolyl β-hydroxyethyl sulfone	$C_9H_{12}O_3S$			54-6	AH
0-7260	di-(2-Acetoxyethyl) sulfone	$C_8H_{14}O_6S$	172-5	.5	1.4692	AK
0-7261	di-(2-Butyroxyethyl) sulfone	$C_{12}H_{22}O_6S$	177-81	.5	1.4702	AK
0-7262	2-Nitro-3-hydroxyhexane	$C_6H_{13}O_3N$	83-5	9	1.4400	AL
0-7263	2-p-Toluenesulfonylcyclohexanone	$C_{13}H_{16}O_3S$			80-82	AH
0-7264	2,2-Diallyl cyclohexanone	$C_{12}H_{18}O$	121-2	13	1.4861	A
0-7265	2-(2,4-Dimethylphenyl)-1-propanol	$C_{11}H_{16}O$	110-22	1	1.5540	AA
0-7266	7-Methyl-4-oxo-5-octenoic acid, allyl ester	$C_{12}H_{18}O_3$	104-12	1	1.4723	E
0-7267	2-Nitro-3-hydroxy-4-ethyloctane	$C_{10}H_{21}O_3N$	140-6	1	1.4490	AL
0-7268	2,5-Dimethyl-1,1-dimethylol cyclohexane dilaurate	$C_{34}H_{64}O_4$	248-50	.5		A

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0-7269	1,2-Indanediol-di-2-ethyl-hexoate	$C_{25}H_{38}O_4$	189-92	.5		A
0-7270	2,2-Dipropyl cyclohexanone	$C_{12}H_{22}O$	102-4	10	1.4604	R
0-7271	Benzyl carbopropoxymethyl sulfone	$C_{12}H_{16}O_4S$	164-9	.5	1.5274	AN
0-7272	Benzyl α,α-dimethylolethyl sulfone	$C_{11}H_{16}O_4S$	141-6	.5	1.5294	AE
0-7273	Benzyl ethyl sulfone	$C_9H_{12}O_2S$			83-4	AN
0-7274	Ethyl p-bromophenyl carbonate	$C_9H_9O_3Br$	107-8	2		A
0-7275	2,2-Diallyl cyclohexanol	$C_{12}H_{20}O$	107-11	6	1.4860	AO
0-7276	Butyraldehyde oxime	C_4H_9ON	145-50		1.4302	M
0-7277	Isobutyraldehyde oxime	C_4H_9ON	136-9		1.4400	M
0-7278	Methyl benzyl sulfone	$C_8H_{10}O_2S$			118-20	AN
0-7279	Methyl α,α-dimethylol benzyl sulfone	$C_{10}H_{14}O_4S$	138-42	.5	1.5352	AE
0-7280	o-Chlorobenzaldehyde oxime	C_7H_6ONCl			72-3	M
0-7281	2-Allylcyclohexanone oxime	$C_9H_{15}ON$			105-6	M
0-7282	α-Isonitrosopropiophenone	$C_9H_9O_2N$			113-14	A
0-7283	p-Methoxyacetophenone oxime	$C_9H_{11}O_2N$			85-6	M
0-7284	1-Phenyl-3-hydroxy-4-nitro-1-pentene	$C_{11}H_{13}O_3N$			123-4	AL
0-7285	Benzyl n-butyl sulfone	$C_{11}H_{16}O_2S$			95-6	AN
0-7286	Isobutyrophenone oxime	$C_{10}H_{13}ON$			55-7	M
0-7287	Methyl p-tolyl ketone oxime	$C_9H_{11}ON$			86-7	M
0-7288	Cyclohexanone oxime	$C_6H_{11}ON$			90-1	M
0-7289	4-Methyl cyclohexanone oxime	$C_7H_{13}ON$	75-8	1	1.4941	M
0-7290	Benzyl carbomethoxymethyl sulfone	$C_{19}H_{12}O_4S$	150-2	1	1.5250	AN
0-7291	n-Decyl carbomethoxymethyl sulfone	$C_{13}H_{26}O_4S$	170-5	1	1.4653	AN

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0-7292	Benzyl carboallyloxymethyl sulfone	$C_{12}H_{14}O_4S$	165-9	.5	1.5377	E
0-7293	n-Octyl carbomethoxymethyl sulfone	$C_{11}H_{22}O_4S$	154-8	.5	1.4599	AN
0-7294	~~α~~-Vinyl-~~α~~-carbethoxybutyrolactone	$C_9H_{12}O_3$	102-6	.5	1.4593	AP
0-7295	~~α~~-Acetyl-~~β~~-vinyl butyrolactone	$C_8H_{10}O_3$	112-115	5	1.4465	AP
0-7296	Mixture of 1-phenyl-3-buten-2-ol and 2-phenyl-3-buten-1-ol	$C_{10}H_{12}O$	115-119	10	1.5413	B
0-7297	Mixture of 1-phenyl-2-butanol and 2-phenyl-1-butanol	$C_{10}H_{14}O$	109-113	10	1.5242	B
0-7298	Oil of pimenta leaf - crude				1.5331	A
0-7299	" " - distilled total distillate		55-89	1	1.5338	AQ
0-7300	Oil of pimenta leaf - distilled fraction 1		53-114	10	1.4833	AQ
0-7301	Oil of pimenta leaf - distilled fraction 2		114-119	10	1.5150	AQ
0-7302	Oil of pimenta leaf - distilled fraction 3		119-121	10	1.5336	AQ
0-7303	Oil of pimenta leaf - distilled fraction 4		121-122	10	1.5399	AQ
0-7304	Oil of cedar wood				1.5111	A
0-7305	" " " - water white				1.5037	A
0-7306	" " " - microscopic				1.5148	A
0-7307	n-Octyl carboallyloxymethyl sulfone	$C_{13}H_{24}O_4S$	146-51	.5	1.4662	E
0-7308	Benzoate of isobutyraldehyde oxime	$C_{11}H_{13}O_2N$	138-42	.5	1.5806	AR
0-7309	3-Methyl cyclohexanone oxime	$C_7H_{13}ON$	67-70	.5	1.4899*	M
0-7310	1-(o-Tolyl)-2-propanol	$C_{10}H_{14}O$	106-111	9	1.5226*	B
0-7311	p-Isopropyl benzaldehyde oxime	$C_{10}H_{13}ON$	89-90	.5	53-5	M

* = 25°

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0-7312	3,6-Dimethyl-4-octynediol-3,6	$C_{10}H_{18}O_2$			50-1	T
0-7313	Undecylenic acid, N,N-dimethyl amide	$C_{13}H_{24}ON$	115-116	.5	1.4635*	Z
0-7314	α-Vinyl-γ-carbomethoxy-butyrolactone	$C_8H_{10}O_3$	102-5	.5	1.4602	AP
0-7315	α-Phenyl-γ-vinyl butyro-lactone	$C_{12}H_{12}O_2$	156-60	5	54-5	AP
0-7316	n-Octyl carboethoxymethyl sulfone	$C_{12}H_{24}O_4S$	143-7	.5	1.4582	AN
0-7317	2-Isopropyl-5-ethyl-5-nitro-m-dioxane	$C_9H_{17}O_4N$	101-5	.5	1.4540	I
0-7318	2,4,6-Trimethyl-1,2,3,6-tetrahydrobenzaldehyde oxime	$C_{10}H_{17}ON$	124-6	9	1.4968	M
0-7319	p-Chlorobenzaldehyde oxime	C_7H_6ONCl			104-6	M
0-7320	Crotonaldehyde oxime	C_4H_7ON			109-12	AS
0-7321	Benzoate of butyraldehyde oxime	$C_{11}H_{13}O_2N$			118-21	AR
0-7322	Hexahydrobenzoate of isobutyraldehyde oxime	$C_{11}H_{19}O_2N$	96-8	.5	1.4777	AR
0-7323	2,6-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde	$C_9H_{14}O$	72-3	10	1.4671	AT
0-7324	2,6-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde (aerated)	$C_9H_{14}O$	72-3	10	1.4718	AU
0-7325	2-Ethyl-2-hexenal oxime	$C_8H_{15}ON$	101-6	9	1.4906*	M
0-7326	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde	$C_9H_{14}O$	70-71	10	1.4678	AT
0-7327	2,4-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde (aerated)	$C_9H_{14}O$	70-71	10	1.4699	AU
0-7328	2,4,6-Trimethyl-1,2,5,6-tetrahydrobenzaldehyde	$C_{10}H_{16}O$	101-3	22	1.4688	A
0-7329	2,4,6-Trimethyl-1,2,5,6-tetrahydrobenzaldehyde (aerated)	$C_{10}H_{16}O$	101-3	22	1.4729	AU
0-7330	Benzoate of 2-ethyl-2-hexenal oxime	$C_{15}H_{19}O_2N$	40-41	1.5	1.4421*	AR

* = 25°

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-7331	n-Decyl carboethoxymethyl sulfone	$C_{14}H_{28}O_4S$	174-6	1	1.4640	AN
O-7332	Benzyl-β-carbomethoxyethyl sulfone	$C_{11}H_{14}O_4S$			145-40	AV
O-7333	2-(2,5-Dimethylphenyl)-1-propanol	$C_{11}H_{16}O$	109-17	.5	1.5055	AA
O-7334	Dimethyl amide of n-octyl carboxymethyl sulfone	$C_{12}H_{25}O_3NS$	166-70	.5	1.4783	Z
O-7335	Allyl β-phenethyl ether	$C_{11}H_{14}O$	96-98	9	1.5042	AW
O-7336	Hexahydrobenzoate of butyraldehyde oxime	$C_{11}H_{13}O_2N$	79-83	.5	1.4720	AR
O-7337	Morpholide of n-octyl carboxymethyl sulfone	$C_{14}H_{27}O_4NS$			82-4	Z
O-7338	Allyl benzyl ether	$C_{10}H_{12}O$	84-5	10	1.5127	AW
O-7339	2-Phenyl-4-hydroxy-5-hexenonitrile	$C_{12}H_{13}ON$	155-60	.5	1.5398	AP
O-7340	Dimethylolbonzyl butyl sulfone	$C_{13}H_{20}O_4S$	140-2	.5	1.5228	AE
O-7341	Isobutyrate of 2-ethyl-2-hexenol oxime	$C_{12}H_{21}O_2N$	63-6	9	1.4338	AR
O-7342	Benzyl-β-carboethoxyethyl sulfone	$C_{12}H_{16}O_4S$			104-5	AV
O-7343	Methallyl benzyl ether	$C_{11}H_{14}O$	96-8	14	1.5361	AW
O-7344	Methallyl-β-phenethyl ether	$C_{12}H_{16}O$	101-3	11	1.5264	AW
O-7345	Chloracetic acid, 2-phenoxyethyl ester	$C_{10}H_{11}O_3Cl$	120-4	.5	1.5232	E
O-7346	β-Phenyl-α-methylglycidic acid, isopropyl ester	$C_{13}H_{16}O_3$	99-100	.5	1.5054	D
O-7347	α-Phenyl-β-ethylglycidic acid, ethyl ester	$C_{13}H_{16}O_3$	96-100	.5	1.5000	D
O-7348	α-Phenylglycidic acid, methyl ester	$C_{10}H_{10}O_3$	141-3	8	1.5381	D
O-7349	Allyl β-phenoxyethyl ether	$C_{11}H_{14}O_2$	120-22	10	1.5110	AW
O-7350	Allyl β-benzyloxyethyl ether	$C_{12}H_{16}O_2$	127-31	10	1.4983	AW

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-7351	α-Phenyl-β-hydroxyvalero-nitrile	$C_{11}H_{13}ON$	129-34	.5	1.5260	AP
O-7352	Methallyl β-phenoxyethyl ether	$C_{12}H_{16}O_2$	122-3	11	1.5300	AW
O-7353	Methallyl β-benzyloxyethyl ether	$C_{13}H_{18}O_2$	137-9	14	1.4990	AW
O-7354	Allyl β-(o-tolyl)ethyl ether	$C_{12}H_{16}O$	113-5	11	1.5139	AW
O-7355	α-Methyl-β-phenylglycidic acid, methyl ester	$C_{11}H_{12}O_3$	133-4	9	1.5143	D
O-7356	β-Phenylglycidic acid, ethyl ester	$C_{11}H_{12}O_3$	141-5	9	1.5295	D
O-7357	β-Phenylglycidic acid, propyl ester	$C_{12}H_{14}O_3$	114-23	.5	1.4920	D
O-7358	2-Methyl-5-ethyl-5-nitro-m-dioxane	$C_7H_{13}O_4N$	128-30	9	67	I
O-7359	Cyanoacetic acid, 2-methyl-cyclohexyl ester	$C_{10}H_{15}O_2N$	103-7	.5	1.4582	E
O-7360	2-Methallylcyclohexanone	$C_{10}H_{16}O$	97-102	10	1.4711	AX
O-7361	Allyl 2-methylbenzyl ether	$C_{11}H_{14}O$	96-8	9	1.5091	AV
O-7362	α-Phenyl-γ-valerolactone	$C_{11}H_{12}O_2$	119-24	.5	1.5304	AY
O-7363	2,5-Dimethyl-5-nitro-m-dioxane	$C_6H_{11}O_4N$	118-21	11	43.5*	I
O-7364	Methyl benzyl carbinol	$C_9H_{12}O$	88-100	2	1.5534	B
O-7365	Methallyl o-methylbenzyl ether	$C_{12}H_{16}O$	107-10	13	31*	AV
O-7366	2-(1-Phenylpropyl) allyl ether	$C_{12}H_{16}O$	94-8	6	1.5079	AW
O-7367	2-Vinyl-5-methyl-m-dioxane	$C_7H_{11}O_4N$	99-104	5	1.4675	AZ
O-7368	Acetonyl acetone dioxime	$C_6H_{12}O_2N_2$			134-5	M
O-7369	N-sec. Butyl-1,2,3,6-tetra-hydrophthalimide	$C_{12}H_{17}O_2N$	110-3	.5	1.4992	Y
O-7370	Cyanoacetic acid, 3-methyl cyclohexyl ester	$C_{10}H_{15}O_4N$	109-12	.5	1.4570	E
O-7371	Cyanoacetic acid, 4-methyl cyclohexyl ester	$C_{10}H_{15}O_4N$	101-7	.5	1.4560	E

* = set point

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-7372	2-Vinyl-5-ethyl-5-nitro-m-dioxane	$C_8H_{13}O_4N$	107-10	.5	1.4695	I
0-7373	α-Methyl-β-phenylglycidic acid, methallyl ester	$C_{14}H_{16}O_3$	104-8	.5	1.5118	D
0-7374	α-Methyl-β-phenylglycidic acid, allyl ester	$C_{13}H_{14}O_3$	101-2	.5	1.5142	D
0-7375	2-(1-phenylpropyl) methallyl ether	$C_{13}H_{18}O$	95-100	5	1.5182	AW
0-7376	α-Methyl-β-p-chlorophenyl glycidic acid, ethyl ester	$C_{12}H_{13}O_3Cl$	116-8	1	1.5221	D
0-7377	α-Methyl-β-p-chlorophenyl glycidic acid, methyl ester	$C_{11}H_{11}O_3Cl$	96-8	.5	1.5214	D
0-7378	α-Isopropyl-β-phenylglycidic acid, methyl ester	$C_{13}H_{16}O_3$	99-103	.5	1.4980	D
0-7379	α-Isopropyl-β-phenylglycidic acid, ethyl ester	$C_{14}H_{18}O_3$	103-7	.5	1.4967	D
0-7380	Cyanoacetic acid, 2-ethylhexyl ester	$C_{11}H_{19}O_2$	106-8	.5	1.4380	E
0-7381	α,β-Dimethyl-β-phenyl glycidic acid, ethyl ester	$C_{13}H_{16}O_3$	102-14	.5	1.5448	D
0-7382	2-Methallyl cyclohexanol	$C_{10}H_{18}O$	101-5	10	1.4793	AO
0-7383	α-Methyl-β-phenylglycidic acid, methallyl ester	$C_{14}H_{16}O_3$	112-6	.5	1.5220	D
0-7384	α-Methyl-β-p-chlorophenyl-glycidic acid, propyl ester	$C_{13}H_{15}O_3Cl$	116-9	.5	1.5199	D
0-7385	α-Methyl-β-p-chlorophenyl-glycidic acid, allyl ester	$C_{13}H_{13}O_3Cl$	109-12	.5	1.5262	D
0-7386	N-Allyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{15}O_2N$	158-9	11	1.5121	Y
0-7387	2-Isobutyl-5-methyl-5-nitro-m-dioxane	$C_9H_{17}O_4N$	108-10	.5	52*	I
0-7388	α-Methyl-β-phenylglycidic acid, ethyl ester	$C_{12}H_{14}O_3$	99-101	.5	1.5096	D
0-7389	β-Phenylglycidic acid, methallyl ester	$C_{13}H_{14}O_3$	106-11	.5	1.5454	D

* = set point

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N^{25}_D or m.p.	Method
0-7390	α,β-Dimethylglycidic acid, propyl ester	$C_8H_{14}O_3$	84-7	11	1.4292	D
0-7391	N-n-Propyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{17}O_2N$	115-6	2	1.4990	Y
0-7392	N-n-Propyl-1,2,3,6-tetrahydrophthalimide	$C_{11}H_{15}O_2N$	117-9	2	1.5042	Y
0-7393	Methallyl p-methoxybenzyl ether	$C_{12}H_{16}O_2$	89-91	.5	1.5360	AW
0-7394	N-Isopropyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{17}O_2N$	109-10	2	1.4940	Y
0-7395	N-Isopropyl-1,2,3,6-tetrahydrophthalimide	$C_{11}H_{15}O_2N$	99-100	.5	58*	Y
0-7396	N-Isobutyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{17}O_2N$	117-9	2	1.5010	Y
0-7397	N-n-Butyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{13}H_{19}O_2N$	116-8	2	1.4934	Y
0-7398	2,5-Dimethyl-2-ethyl-5-nitro-m-dioxane	$C_8H_{15}O_4N$	77-8	.5	1.4548	I
0-7399	2-Methallyl-4-methylcyclohexanone	$C_{11}H_{18}O$	105-8	10	1.4700	AX
0-7400	Chloracetic acid, 2-butoxyethyl ester	$C_8H_{15}O_3Cl$	79-80	.5	1.4371	E
0-7401	α-Methyl-β-phenylglycidic acid, propyl ester	$C_{13}H_{16}O_3$	97-100	.5	1.5058	D
0-7402	α-Ethyl-β-phenylglycidic acid, propyl ester	$C_{14}H_{18}O_3$	98-103	.5	1.4988	D
0-7403	α-Ethyl-β-phenylglycidic acid, methyl ester	$C_{12}H_{14}O_3$	99-101	.5	1.5004	D
0-7404	α-Ethyl-β-phenylglycidic acid, ethyl ester	$C_{13}H_{16}O_3$	101-5	.5	1.5078	D
0-7405	Allyl p-methoxybenzyl ether	$C_{11}H_{14}O_2$	82-5	.5	1.5180	AW
0-7406	Benzal acetylacetone	$C_{12}H_{12}O_2$	113-5	.5	1.5780	BB
0-7407	β-Phenylglycidic acid, allyl ester	$C_{12}H_{12}O_3$	108-12	.5	1.5554	D
0-7408	N-Isobutyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide	$C_{13}H_{17}O_2N$	107-10	1	89-90	Y

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* = set point

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-7409	N-n-Butyl hexahydrophthalimide	$C_{12}H_{19}O_2N$	115-8	2	1.4907	Y
O-7410	N-Allyl hexahydrophthalimide	$C_{11}H_{15}O_2N$	109-13	2	1.5078	Y
O-7411	N-n-Butyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide	$C_{13}H_{17}O_2N$	128-9	1	1.5090	Y
O-7412	α-Ethyl-β-methyl-α-phenyl glycidic acid, methyl ester	$C_{13}H_{16}O_3$	97-105	.5	1.5421	D
O-7413	α-Ethyl-β-methyl-α-phenyl glycidic acid, ethyl ester	$C_{14}H_{18}O_3$	110-2	.5	1.5301	D
O-7414	Methyl propyl ketone glycerol	$C_8H_{16}O_3$	102-3	10	1.4394	BA
O-7415	α-Ethyl-β-phenylglycidic acid, allyl ester	$C_{14}H_{16}O_3$	105-8	.5	1.5087	D
O-7416	α,β-Dimethyl-α-phonyl-glycidic acid, allyl ester	$C_{14}H_{16}O_3$	109-111	.5	1.5840	D
O-7417	2-Furyl-5-ethyl-5-nitro-m-dioxane	$C_{10}H_{13}O_5N$	137-43	.5	63-4	I
O-7418	2-Methyl-2,5-diethyl-5-nitro-m-dioxane	$C_9H_{17}O_4N$	87-90	.5	1.4549	I
O-7419	2-Furyl-5-methyl-5-nitro-m-dioxane	$C_9H_{11}O_5N$	132-7	.5	96-7	AZ
O-7420	2,2,5-Trimethyl-5-nitro-m-dioxane	$C_7H_{13}O_4N$			82-3	I
O-7421	2-Propyl-5-hydroxymethyl-5-nitro-m-dioxane	$C_8H_{15}O_5N$			89-91	I
O-7422	m-Aminotrifluorotoluene	$C_7H_6NF_3$	53-5	1	1.4779	A
O-7423	Butylidene acetylacetone	$C_9H_{14}O_2$	93-6	13	1.4782	BB
O-7424	Chloroacetic acid, 2-ethylhexyl ester	$C_{10}H_{19}O_2Cl$	95-100	4	1.4382	E
O-7425	Cyclohexanone glycerol	$C_9H_{16}O_3$	115-7	6	1.4753	BA
O-7426	2-Methallyl-4-methylcyclohexanol	$C_{11}H_{20}O$	108-112	10	1.4769	AO
O-7427	Cyanoacetic acid, n-hexyl ester	$C_9H_{15}O_2N$	92-5	.5	1.4308	E
O-7428	Cyanoacetic acid, β-phenoxyethyl ester	$C_{11}H_{11}O_3N$	154-60	.5	48-50	E

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-7429	α-Methyl-β-propylglycidic acid, ethyl ester	$C_9H_{16}O_3$	89-91	10	1.4266	D
O-7430	Acetophenone glycerol	$C_{11}H_{14}O_3$	104-7	.5	1.5180	BA
O-7431	2,2-Dimethyl-5-ethyl-5-nitro-m-dioxane	$C_8H_{15}O_4N$			54-6	I
O-7432	Chloroacetic acid, cyclohexyl ester	$C_8H_{13}O_2Cl$	101	10	1.4649	E
O-7433	α-Methyl-β-phenylglycidic acid, crotyl ester	$C_{14}H_{16}O_3$	108-13	1	1.5139	D
O-7434	β-Chloropropionic acid, tetrahydrofurfuryl ester	$C_8H_{13}O_3Cl$	89-90	1	1.4631	E
O-7435	α-Chloropropionic acid, tetrahydrofurfuryl ester	$C_8H_{13}O_3Cl$	75-6	1	1.4577	E
O-7436	N-Isopropyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{15}O_2N$	118-20	1	88-9	Y
O-7437	2-Phehyl-5-hydroxymethyl-5-nitro-m-dioxane	$C_{11}H_{13}O_5N$			110-1	I
O-7438	3-Allyl-2,4-pentanedione	$C_8H_{12}O_2$	74-84	10	1.4663	BC
O-7439	N-Isopropyl-3-methyl-1,2,3,6-tetrahydrophthalimido	$C_{12}H_{17}O_2N$	101-3	1	1.4959	Y
O-7440	α-Chloropropionic acid, 2-butoxyethyl ester	$C_9H_{17}O_3Cl$	104-6	7	1.4340	E
O-7441	α,β-Dimethylglycidic acid, cyclohexyl ester	$C_{11}H_{18}O_3$	86-9	.5	1.4542	D
O-7442	β,β-Dimethylglycidic acid, 2-ethylhexyl ester	$C_{13}H_{24}O_3$	93-5	.5	1.4361	D
O-7443	α-Methyl-β-propylglycidic acid, cyclohexyl ester	$C_{13}H_{22}O_3$	134-6	7	1.4580	D
O-7444	Benzal acetonyl acetone	$C_{13}H_{14}O_2$	140-5	.5	1.5657	BB
O-7445	β-Chloropropionic acid, 2-butoxyethyl ester	$C_9H_{17}O_3Cl$	116-8	.5	1.4391	E
O-7446	N-n-Butyl-3-methyl-1,2,3,6-tetrahydrophthalimido	$C_{13}H_{19}O_2N$	119-21	.5	1.4970	Y
O-7447	N-Allyl-3-methyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{15}O_2N$	112-3	.5	1.5190	Y

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	$N^{25}D$ or m.p.	Method
O-7448	N-β-Hydroxypropyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{17}O_3N$	143-5	.5	1.5132	Y
O-7449	Ethyl 4-tert. butyl-2-chlorophenyl carbonate	$C_{13}H_{17}O_3Cl$	105-11	.5	1.4996	BD
O-7450	p-Chloroacetophenone glycerol	$C_{11}H_{13}O_3Cl$	126-31	.5	1.5311	BA
O-7451	α-Cyanobutyric acid, cyclohexyl ester	$C_{11}H_{17}O_2N$	95-7	.5	1.4524	E
O-7452	α-Methyl-β-phenylglycidic acid, propyl ester	$C_{13}H_{16}O_3$	98-100	.5	1.5018	D
O-7453	p-Tolyl ethyl carbonate	$C_{10}H_{12}O_3$	91-3	.5	1.4878	BD
O-7454	α-Chloropropionic acid, benzyl ester	$C_{10}H_{11}O_2Cl$	95-7	.5	1.5050	E
O-7455	α-Chloropropionic acid, amyl ester	$C_8H_{15}O_2Cl$	98-104	25	1.4281	E
O-7456	α,β,β-Trimethylglycidic acid, amyl ester	$C_{11}H_{20}O_3$	97-103	8	1.4300	D
O-7457	α-Cyanopropionic acid, cyclohexyl ester	$C_{10}H_{15}O_2N$	82	.1	1.4517	E
O-7458	α,β,β-Trimethylglycidic acid, propyl ester	$C_9H_{16}O_3$	84-5	10	1.4250	D
O-7459	α-Chlorobutyric acid, tetrahydrofurfuryl ester	$C_9H_{15}O_3Cl$	84-9	.1	1.4579	E
O-7460	N-β-hydroxyethyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{11}H_{15}O_3N$	149-52	.5	1.5196	Y
O-7461	α-Cyanopropionic acid, p-methylcyclohexyl ester	$C_{11}H_{17}O_2N$	87-91	.1	1.4502	E
O-7462	α,β,β-Trimethylglycidic acid, benzyl ester	$C_{13}H_{16}O_3$	61-4	.5	1.5152	D
O-7463	4-Methyl-2-chlorophenyl ethyl carbonate	$C_{10}H_{11}O_3Cl$	97-100	.5	1.5020	BD
O-7464	α-Cyanobutyric acid, o-methylcyclohexyl ester	$C_{12}H_{19}O_2N$	98-100	.5	1.4524	E
O-7465	1,2-Propylene glycol, monovalerate	$C_8H_{16}O_3$	82-5	5	1.4271	BE
O-7466	Ethylene glycol, monovalerate	$C_7H_{14}O_3$	110-1	11	1.4291	BF

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	METHOD
O-7467	α-Cyanobutyric acid, m-methyl cyclohexyl ester	$C_{12}H_{19}O_2N$	91-4	.5	1.4510	E
O-7468	α-Cyanobutyric acid, p-methyl cyclohexyl ester	$C_{12}H_{19}O_2N$	97-101	.5	1.4510	E
O-7469	2-Methyl-4-chlorophenyl ethyl carbonate	$C_{10}H_{11}O_3Cl$	97-9	.5	1.5061	BD
O-7470	α-Cyanopropionic acid, o-methylcyclohexyl ester	$C_{11}H_{17}O_2N$	84-7	.1	1.4510	E
O-7471	" " " " " " m-	$C_{11}H_{17}O_2N$	87-8	.1	1.4493	E
O-7472	N-β-Hydroxyethyl-3,6-endo-methylene-1,2,3,6-tetrahydro-phthalimide	$C_{11}H_{13}O_3N$	153-6	.5	87-88	Y
O-7473	Acetic acid, 2-ketocyclohexyl ester	$C_8H_{12}O_3$	115-9	13	1.4590	BG
O-7474	2-Methyl-2-ethyl-5-hydroxy methyl-5-nitro-m-dioxane	$C_8H_{15}O_5N$	121-2	.5	67-70	I
O-7475	2,2-Pentamethylene-5-hydroxy-methyl-5-nitro-m-dioxane	$C_{10}H_{17}O_5N$			53-55	I
O-7476	N-β-Hydroxyethyl-3,6-endo-methylene-1,2,3,6-tetrahydro-phthalimide acetate	$C_{13}H_{15}O_3N$	141-5	.1	1.5110	Y
O-7477	Dichlorohydroquinone bis-(ethyl carbonate)	$C_{12}H_{12}O_6Cl_2$			77-80	BD
O-7478	N-β-Hydroxyethyl-1,2,3,6-tetrahydrophthalimide	$C_{10}H_{13}O_3N$	156-8	1	81-2	Y
O-7479	N-β-Hydroxyethyl-1,2,3,6-tetrahydrophthalimide acetate	$C_{12}H_{15}O_4N$	127-8	.1	1.5010	L
O-7480	N-β-Hydroxyethyl-1,2,3,6-tetrahydrophthalimide butyrate	$C_{14}H_{19}O_4N$	142-3	.1	1.4951	F
O-7481	Diethylamideotetrahydrobenzoic acid, ethyl ester	$C_{14}H_{23}O_3N$	93-7	.5	1.4628	BH
O-7482	Bromoacetic acid, tetrahydro-furfuryl ester	$C_7H_{11}O_3Br$	104-6	.5	1.4844	E
O-7483	1-(β-Cyanoethyl)-1-isopropyli-dene acetone	$C_9H_{13}ON$	89-93	.5	1.4670	BI
O-7484	α-Acetyl-α-isopropenyl pimelonitrile	$C_{12}H_{16}ON_2$			114-6	BI

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-7485	m-Nitro-trifluorotoluene	$C_7H_4O_2NF_3$	86-8	13	1.4700	BJ
O-7486	Diethylamidotetrahydrobenzoic acid, methyl ester	$C_{13}H_{21}O_3N$	110-2	.1	1.4879	BH
O-7487	Diethylene glycol bis-(α-methoxyethyl carbonate)	$C_{12}H_{22}O_9$	155-8	.1	1.4405	F
O-7488	p-Chlorophenyl n-amyl carbonate	$C_{12}H_{15}O_3Cl$	100-3	.5	1.4940	BD
O-7489	α-Cyano-α,γ-dimethyl-γ-acetyl butyric acid, ethyl ester	$C_{11}H_{17}O_3N$	94-101	.5	1.4452	BK
O-7490	Methyl phenyl-(β-cyanoethyl) acetaldehyde	$C_{12}H_{13}ON$	134-9	.5	1.5238	BI
O-7491	Ethylene glycol, monobenzoate	$C_9H_{10}O_3$	113-5	.5	1.5320	BF
O-7492	" " " , monophenylacetate	$C_{10}H_{12}O_3$	118-121	.5	1.5202	BF
O-7493	2-Propyl-4,4,6-trimethyl-m-dioxane	$C_{10}H_{20}O_2$	61-2	10	1.4230	I
O-7494	p-Tolyl amyl carbonate	$C_{13}H_{18}O_3$	113-5	.5	1.4800	BD
O-7495	2-Acetoxycyclohexanone oxime	$C_8H_{13}O_3N$	111- 5	.5	83*	M
O-7496	1,2-Propylene glycol, monophenylacetate	$C_{11}H_{14}O_3$	117-8	.5	1.5099	BE
O-7497	Diethylene glycol, bis-(methyl carbonate)	$C_8H_{14}O_7$	117	1	1.4273	F
O-7498	Diethylene glycol, bis-(allyl carbonate)	$C_{12}H_{18}O_7$	131-6	.1	1.4493	F
O-7499	2-Propenyl-4,4,6-trimethyl-m-dioxane	$C_{10}H_{18}O_2$	68-74	7	1.4424	I
O-13000	N-(β-Hydroxypropyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide	$C_{12}H_{15}O_3N$	142-5	.5	109-11	Y
O-13001	" " " " " " " " " " " " , acetate	$C_{14}H_{17}O_4N$	140-3	.6	1.5060	L
O-13002	2-Furyl-4,4,6-trimethyl-m-dioxane	$C_{11}H_{16}O_3$	101-3	6	1.4770	I
O-13003	p-Tolyl isobutyl carbonate	$C_{12}H_{16}O_3$	90- 2	.5	1.4790	BD
O-13004	3-Phenyl-1,2-propanediol	$C_9H_{12}O_2$	118-25	.5	1.5413	BL

* = set point

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	$N^{25}D$ or m.p.	Method
0-13005	Bromoacetic acid, cyclohexyl ester	$C_8H_{13}O_2Br$	74-7	.5	1.4840	E
0-13006	Acetotrifluoro-m-toluidine	$C_9H_8ONF_3$			103-4	BN
0-13007	Chloroacetic acid, butyl-carbitol ester	$C_{10}H_{19}O_4Cl$	109-12	1	1.4439	E
0-13008	2,2-Pentamethylene-4,4,6-trimethyl-m-dioxane	$C_{12}H_{22}O_2$	84-9	9	1.4558	I
0-13009	p-Chlorophenyl isobutyl carbonate	$C_{11}H_{13}O_3Cl$	89-91	.5	1.4949	BD
0-13010	-Cyano- , -dimethyl- - acetyl butyric acid, -methoxy-ethyl ester	$C_{12}H_{19}O_4N$	101-5	.5	1.4464	BK
0-13011	-Hydroxy- -methyladipic acid, -lactone methyl ester	$C_8H_{12}O_4$	101-6	.5	1.4560	BN
0-13012	N- -Hydroxypropyl-1,2,3,6-tetrahydrophthalimide	$C_{11}H_{15}O_3N$	149-50	1	1.5200	Y
0-13013	Methyl phenyl acetaldehyde oxime	$C_9H_{11}ON$	98	.5	1.5430	M
0-13014	Cyanoacetic acid, butylcarbitol ester	$C_{11}H_{19}O_4N$	144-6	.5	1.4420	E
0-13015	1-Hydrlxymethylethynyl-1-cyclohexanol (non crystalline portion) 0-7079	$C_9H_{14}O_2$	135-40	1		O
0-13016	-Acetyl- -isopropenylpimelic acid	$C_{12}H_{18}O_5$			131-3	BI
0-13017	" " " " " " , monoethyl ester	$C_{14}H_{22}O_5$	184-90	.5	1.4730	E
0-13018	" " " " " " , diethyl ester	$C_{16}H_{26}O_5$	142-6	.5	1.4658	E
0-13019	4,7-Dimethyl-1,9-hexadiene diol-4,7	$C_{12}H_{22}O_2$	109-12	.5	1.4759	BO
0-13020	m-Trifluoromethylphenylglycine, methyl ester	$C_{10}H_{10}O_2NF_3$			68-69.5	BP
0-13021	" " " " " , propyl ester	$C_{12}H_{14}O_2NF_3$			55-7	BP
0-13022	1-Hydroxy-2-acetoxycyclohexylacetic acid, ethyl ester	$C_{12}H_{20}O_5$	152-7	.5	1.4638	BN

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-13023	4,7-Dimethyldecanediol-4,7	$C_{12}H_{26}O_2$	107-10	.5	1.4560	R
0-13024	n-Butyl p-chlorophenyl carbonate	$C_{11}H_{13}O_3Cl$	89-94	.5	1.4490	BD
0-13025	2-Ethyl-2,4,4,6-tetramethyl-m-dioxane	$C_{10}H_{20}O_2$	51-5	10	1.4387	I
0-13026	3-Hydroxy-4-hexanone	$C_6H_{12}O_2$	62-8	15	1.4220	BQ
0-13027	N-β-Hydroxypropyl-1,2,3,6-tetrahydrophthalimide acetate	$C_{13}H_{17}O_4N$	136-8	.5	1.4988	L
0-13028	2-Isobutyl-2,4,4,6-tetramethyl-m-dioxane	$C_{12}H_{24}O_2$	72-5	10	1.4468	I
0-13029	2,2,4,4,6-Pentamethyl-m-dioxane	$C_9H_{18}O_2$	43-6	14	1.4247	I
0-13030	α-Cyano-β,β-dimethyl-δ-acetylbutyric acid, methyl ester	$C_{10}H_{15}O_3N$	100-4	.5	1.4478	BK
0-13031	p-Tolyl butyl carbonate	$C_{12}H_{16}O_3$	103-6	.5	1.4812	BD
0-13032	p-Bromophenyl ethyl carbonate	$C_9H_9O_3Br$	103-5	.5	1.5490	BD
0-13033	β(α-Tetralyl)glycidic acid, ethyl ester	$C_{14}H_{16}O_3$	153-6	2	1.5236	A
0-13034	Diethylene glycol monobenzoate	$C_{11}H_{14}O_4$	127-30	.5	1.5200	F
0-13035	Butyrotrifluoro-m-toluidine	$C_{11}H_{12}ONF_3$	124-7	.5	1.5853	Z
0-13036	2,4,7,9-Tetramethyl-1,9-decadienediol-4,7	$C_{14}H_{26}O_2$	135-40	1	1.4792	BO
0-13037	2,4,7,9-Tetramethyldecanediol-4,7	$C_{14}H_{30}O_2$	108-10	.5	1.4609	R
0-13038	o-Chlorophenyl ethyl carbonate	$C_9H_9O_3Cl$	92-4	.5	1.5008	BD
0-13039	2,3-Octanediol	$C_8H_{18}O_2$	91-3	.5	1.4447	BR
0-13040	δ-Carboethoxy-β-cyano-pimelonitrile	$C_{11}H_{13}O_2N_3$			34-6	BI
0-13-41	β,δ-Dicarboethoxypimelonitrile	$C_{13}H_{18}O_4N_2$			60-1	BI
0-13042	β-Allyloxy-α-phenylethyl alcohol	$C_{11}H_{14}O_2$	114-6	5	1.5189	BS

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N^{25}_{D} or m.p.	Method
0-13043	2,2-Dimethyl-1,1-dicarbomethoxypenanone-4	$C_{11}H_{18}O_5$	91-4	.5	1.4462	BT
0-13044	α-Cyano-β,β-dimethyl-γ-acetylbutyric acid, allyl ester	$C_{12}H_{17}O_3N$	91-6	.5	1.4469	BK
0-13045	2,2-Dimethyl-1,1-dicarboalloxypentanone-4	$C_{15}H_{22}O_5$	126-7	1	1.4560	BT
0-13046	Diethylene glycol, monoisobutyrate	$C_8H_{16}O_4$	128-32	10	1.4311	E
0-13047	" " , monobutyrate	$C_8H_{16}O_4$	137-42	10	1.4347	F
0-13048	" " , monopropionate	$C_7H_{14}O_4$	131-4	8	1.4321	E
0-13049	Commercial preparation K-2589					A
0-31050	" " F-3810					A
0-13051	" " A-276					A
0-13052	" " A-2786					A
0-13053	" " F-1581					A
0-31054	" " E-5963					A
0-13055	" " D-6291					A
0-13056	" " N-9825					A
0-13057	" " R-39					A
0-13058	1,2-Octanediol	$C_8H_{18}O_2$	95-8	.5	1.4403	BR
0-13059	γ-Pentyloxy-α-phenylethyl alcohol	$C_{13}H_{10}O_2$	103-5	.5	1.4983	BS
0-13060	2-Phenylpropanediol-1,2	$C_9H_{12}O_2$	106-8	.5	1.5329	BR
0-13061	1,2-Octanediol, diacetate	$C_{12}H_{22}O_4$	109-10	.5	1.4270	E
0-13062	Bromoacetic acid, butylcarbitol ester	$C_{10}H_{19}O_4Br$	116-8	.5	1.4575	E
0-13063	δ-Acetyl-γ-methylpimeolnitrile	$C_{10}H_{14}ON_2$			61-3	BI
0-13064	bis-(β-Carboxyethyl)ether, diethyl ester	$C_{10}H_{18}O_5$	101-5	.5	1.4300	BT

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-13065	bis-(γ-Carboxyethyl)ether, dibutyl ester	$C_{14}H_{26}O_5$	116-21	.5	1.4329	BT
0-13066	β-(β-Ethoxyethyl)-α-phenylethyl alcohol	$C_{12}H_{18}O_3$	114-6	.5	1.5078	BS
0-13067	Bis-(β-carboxyethyl)ether, diallyl ester	$C_{12}H_{18}O_5$	122-5	1	1.4412	BT
0-13068	β-Methallyloxy-α-phenylethyl alcohol	$C_{12}H_{16}O_2$	91-3	.5	1.5089	BS
0-13069	γ-Acetyl-γ-methylpimelic acid, diethyl ester	$C_{14}H_{24}O_5$	138-43	.5	1.4526	BT
0-13070	Acetic acid, β-methoxy-α-phenylethyl ester	$C_{11}H_{14}O_3$	83-5	.5	1.4925	E
0-13071	Bis-(γ-carboxyethyl)ether, di-2-methoxyethyl ester	$C_{12}H_{22}O_7$	93-4	.5	1.4295	BT
0-13072	β-(2,4-Dihydroxyphenyl) propionic acid	$C_9H_{10}O_4$			163-4	BU
0-13073	m-Trifluoromethylphenyl-glycine	$C_9H_8O_2NF_3$			120-2	BP
0-13074	Crotonic acid, β-methoxy-α-phenylethyl ester	$C_{13}H_{16}O_3$	98-102	.5	1.5065	E
0-13075	Phenylethylene glycol, diacetate	$C_{12}H_{14}O_4$	105-7	.5	1.4961	BV
0-13076	Phenylethylene glycol, dipropionate	$C_{14}H_{18}O_4$	114-7	.5	1.4939	BV
0-13077	β-Phenylglycidic, acid, tetrahydrofurfuryl ester	$C_{14}H_{16}O_4$	145-50	.5	1.5401	D
0-13078	Allyl β-cyanoethyl ether	$C_6H_{10}O_3$	78-80	.5	1.4350	BW
0-13079	Bromoacetic acid, α-tetralyl ester	$C_{12}H_{14}O_2Br$	165-70	.5	1.6203	E
0-13080	Diethylene glycol, mono-phenylacetate	$C_{12}H_{16}O_4$	136-40	.5	1.5114	E
0-13081	N-Allyl phthalimide	$C_{11}H_9O_2N$	112-4	.5	68-9	Y
0-13082	β-Methyl-β-isobutylglycidic acid, ethyl ester	$C_{10}H_{18}O_3$	98-102	11	1.4300	D
0-13083	4-Methyl-1,7-heptadieneol-4	$C_8H_{14}O$	50-1	9	1.4500	BO

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-13084	4-Methyl-heptanol-4	$C_8H_{18}O$	54-5	6	1.4239	R
0-13085	α-Methyl-β-benzoylpropionic acid, ethyl ester	$C_{13}H_{16}O_3$	138-42	12	1.5028	A
0-13086	γ-(3-Hepten-3-yl) glycidic acid, methyl ester	$C_{11}H_{18}O_3$	127-30	11	1.4691	D
0-13087	3,4-Hexanediol, diacetate	$C_{10}H_{18}O_4$	78-82	4	1.4226	L
0-13088	Isovalerylacetic acid, cyclohexyl ester	$C_{13}H_{22}O_3$	94-6	1	1.4590	BX
0-13089	2-Phenyl-m-dioxane	$C_{10}H_{12}O_2$	77-9	.5	1.5174	I
0-13090	4,5-Octanediol	$C_8H_{18}O_2$			112-4	R
0-13091	N-Propyl phthalimide	$C_{11}H_{11}O_2N$			60-3	Y
0-13092	4-Octene-4,5-diol diacetate	$C_{12}H_{20}O_4$	70-2	1	1.4242	L
0-13093	N-Propyl hexahydrophthalimide	$C_{11}H_{15}O_2N$	94-6	.5	1.4911	R
0-13094	Cyclopentanone glycerol	$C_8H_{14}O_3$	104-7	7	1.4692	BA
0-13095	2-Ethyl-3-propylacrolein glycerol	$C_{11}H_{20}O_3$	126-8	8	1.4650	BA
0-13096	Hexin-2-oic acid, cyclohexyl ester	$C_{12}H_{18}O_2$	94-5	.5	1.4751	E
0-13097	4-Propyl-1,7-heptadieneol-4	$C_{10}H_{18}O$	73-6	10	1.4548	BO
0-13098	4-Propylheptanol-4	$C_{10}H_{22}O$	76-7	7	1.4329	R
0-13099	4-Pentyl-1,7-heptadieneol-4	$C_{12}H_{22}O$	93-6	9	1.4552	BO
0-13100	γ-(3-Hepten-3-yl) glycidic acid, allyl ester	$C_{13}H_{20}O$	128-32	8	1.4780	D
0-13101	Acetic acid, β-propoxy-α-phenylethyl ester	$C_{13}H_{18}O_3$	94-6	.5	1.4833	E
0-13102	Crotonic acid, " " phenylethyl ester	$C_{15}H_{20}O_3$	103-7	.5	1.5002	E
0-13103	Methyl isobutyl glycidic acid, cyclohexyl ester	$C_{14}H_{24}O_3$	109-12	.5	1.5586	D
0-13104	1,2-Tetradecanediol	$C_{14}H_{30}O_2$	138-44	.5	41-3	BR
0-13105	N-sec. Butyl hexahydrophthalimide	$C_{12}H_{19}O_2N$	108-10	1	1.4867	Y

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-13106	2-Propyl-m-dioxane	$C_7H_{14}O_2$	42-8	9	1.4238	I
0-13107	2-Furyl-m-dioxane	$C_8H_{10}O_3$	97-101	7	1.4813	I
0-13108	N-Isobutyl hexahydrophthalimide	$C_{12}H_{19}O_2N$	105-10	1	1.4876	Y
0-13109	3-Phenoxy-1,2-propane oxide	$C_9H_{10}O_2$	102	4	1.5304	BY
0-13110	3-o-Cresoxy-1,2-propane oxide	$C_{10}H_{12}O_2$	113-4	4	1.5262	BY
0-13111	3-p-Chlorophenoxy-1,2-propane oxide.	$C_9H_9O_2Cl$	133	4	1.5444	BY
0-13112	3-p-Tertiary amylphenoxy-1,2-propane oxide	$C_{14}H_{20}O_2$	128-30	.5	1.5160	BY
0-13113	Chloroacetic acid, 2-ethoxy-ethyl ester	$C_6H_{11}O_3Cl$	86-9	7	1.4270	E
0-13114	Methyl isobutyl ketone glycerol	$C_9H_{18}O_3$	97-9	6	1.4402	BA
0-13115	2-Ethyl-1,2-hexanediol	$C_8H_{18}O_2$	111-14	9	1.4422	BR
0-13116	4-Pentylnonanol-4	$C_{12}H_{16}O$	92-3	6	1.4380	R
0-13117	X-Methyl-X-(2-methyl-1-propenyl)glycidic acid, ethyl ester	$C_{10}H_{16}O_3$	108-113	9	1.4559	D
0-13118	2-Phenyl-2-penten-4-ol	$C_{11}H_{14}O$	91-5	1	1.5257	BO
0-13119	Mesityl oxide glycerol	$C_9H_{16}O_3$	104-6	7	1.4582	BA
0-13120	X-(1,2,3,4-Tetrahydro-1-naphthyl) ethanol	$C_{12}H_{16}O$	101-4	1	1.5493	BZ
0-13121	2-(X-Ethyl-X-propylvinyl)-m-dioxane	$C_{11}H_{20}O_2$	104-8	11	1.4550	I
0-13122	2-Methyl-2-isobutyl-m-dioxane	$C_9H_{18}O_2$	66-71	12	1.4311	I
0-13123	X-Hydroxy-X-methyladipic acid, X-lactone cyclohexyl ester	$C_{13}H_{20}O_4$	134-40	1	1.4711	BN
0-13124	N-Isobutyl phthalimide	$C_{12}H_{13}O_2N$	113-5	1	87-9	Y
0-13125	5-Ethyl-4-(2-propenyl) nonan-1-ol-4	$C_{14}H_{26}O$	114-9	8	1.4721	BO
0-13126	5-Ethyl-4-propylnonanol-4	$C_{14}H_{30}O$	110-12	6	1.4550	R

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
0-13127	3-Hydroxy-4-ethyl-4-octenoic acid, methyl ester	$C_{11}H_{20}O_3$	92-3	.5	1.4569	BN
0-13128	3-Acetoxy- " " " "	$C_{13}H_{22}O_4$	96-8	.5	1.4488	E
0-13129	3-Hydroxy-4-ethyloctanoic acid, methyl ester	$C_{11}H_{22}O_3$	92-6	.5	1.4404	R
0-13130	β-(3-Hepten-3-yl)glycidic acid, isopropyl ester	$C_{13}H_{22}O_3$	131-2	10	1.4606	D
0-13131	3-Hydroxy-4-ethyl-4-octenoic acid, propyl ester	$C_{13}H_{24}O_3$	107-9	.5	1.4451	BN
0-13132	2-Ethyl-1,2-hexanediol diacetate	$C_{12}H_{22}O_4$	79-83	8	1.4323	E
0-13133	Mixture of 2,4,4-trimethyl-1,2-pentanediol and 2,4,4-trimethyl-2,3-pentanediol	$C_8H_{18}O_2$	106-10	9	1.4371	BR
0-13134	3-Hydroxy-4-ethyloctanoic acid, propyl ester	$C_{13}H_{26}O_3$	99-103	.5	1.5440	R
0-13135	2-(3-Heptyl)-m-dioxane	$C_{11}H_{22}O_2$	96-9	11	1.4390	I
0-13136	α-Propionyl propionic acid, ethyl ester	$C_8H_{14}O_3$			1.4200	A
0-13137	α-Propionyl propionic acid, cyclohexyl ester	$C_{12}H_{20}O_3$	105-6	2	1.4531	BX
0-13138	3,6,8-Trimethyl-4-nonynediol-3,6	$C_{12}H_{22}O_2$	86-9	.5	1.4649	P
0-13139	3,5-Dimethylhexanol-3-one-2	$C_8H_{16}O_2$	67-70	14	1.4304	N
0-13140	2-Methyl-2-p-tolyl-m-dioxane	$C_{12}H_{16}O_2$	69-72	.5	1.5112	I
0-13141	N-Amyl-1,2,3,6-tetrahydrophthalimide	$C_{13}H_{19}O_2N$	120-5	1	1.4978	Y
0-13142	1,3-Diphenoxy propanol-2	$C_{15}H_{16}O_3$			79-80	BY
0-13143	1-β-Naphthoxy-2,3-epoxy propane	$C_{13}H_{12}O_2$			61-2	BY
0-13144	1-Phenoxy-3-chloropropanol-2	$C_9H_{11}O_2Cl$	161-8	13	1.5097	BY
0-13145	1-o-Cresoxy-propylenechlorohydrin-2,3	$C_{10}H_{13}O_2Cl$	117-21	.5	1.5345	CA
0-13146	1-(2,4-Dichlorophenoxy)-2,3-epoxypropane	$C_9H_8O_2Cl_2$	120-6	.5	1.5587	BY

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-13147	1-(o-Amylphenoxy-2,3-epoxypropane	$C_{14}H_{20}O_2$	123-8	.5	1.5245	BY
O-13148	1-(2,4-Dichlorophenoxy)-2,3-propanediol	$C_9H_{10}O_3Cl_2$	168-74	.5	1.5621	CB
O-13149	2-(o-Chlorophenyl)-m-dioxane	$C_{10}H_{11}O_2Cl$	105-6	.5	1.5367	I
O-13150	Benzoyl cyanide	C_8H_5ON	73	4	30	CC
O-31351	4-Octene-4,5-diol diacetate	$C_{12}H_{20}O_4$	69-70	1	1.4240	L
O-13152	N-Amyl hexahydrophthalimide	$C_{13}H_{21}O_2N$	105-10	1	1.4871	Y
O-13153	2,6-Dimethyl-3-isopropyl-4-octynediol-3,6	$C_{13}H_{24}O_2$	96-9	1	35*	P
O-13154	2,5-Dimethyl-3-heptynediol-2,5	$C_9H_{16}O_2$	74-6	1	31*	P
O-13155	N-Amyl-3,6-endomethylene-1,2,3,6-tetrahydrophthalimide	$C_{14}H_{19}O_2N$	119-20	1	1.5050	Y
O-13156	2,4,7-Trimethylnonene-2-yne-5-diol-4,7	$C_{12}H_{20}O_2$	82-5	.5	1.4754	P
O-13157	2-Methyl-2-phenyl-m-dioxane	$C_{11}H_{14}O_2$	53-9	.5	1.5160	I
O-13158	2-Methyl-2-propyl-m-dioxane	$C_8H_{16}O_2$	57-61	12	1.4305	I
O-13159	2-Methyl-2-isobutyl-m-dioxane	$C_9H_{18}O_2$	70-75	13	1.4320	I
O-13160	N-Amyl-3,6-endomethylene hexahydrophthalimide	$C_{14}H_{21}O_2N$	117-8	.5	1.5029	R
O-13161	2-(2'-Phenylvinyl)-m-dioxane	$C_{12}H_{14}O_2$	114-7	.5	1.5548	I
O-13162	2,2-Pentamethylene-m-dioxane	$C_9H_{16}O_2$	86-90	12	1.4668	I
O-13163	2-Ethyl-2 phenyl-m-dioxane	$C_{12}H_{16}O_2$	115-20	12	1.5086	I
O-13164	2-Methyl-2-p-tolyl-m-dioxane	$C_{12}H_{16}O_2$	119-25	12	1.5087	I
O-13165	Diisopropyl ethynyl carbinol	$C_9H_{16}O$	162-3	745	1.4461	K
O-13166	3,6-Dimethyl-4-nonynediol-3,6	$C_{11}H_{20}O_2$	106-9	1		P
O-13167	2-Methyl-α-cyanoglutaric acid, diethyl ester	$C_{11}H_{17}O_4N$	104-9	.2	1.4392	BK
O-13168	2-Methyl-2-p-(anisyl)-m-dioxane	$C_{12}H_{16}O_3$	137-40	12	1.5353	I
O-13169	Cyclohexylcaproic acid, methyl ester	$C_{13}H_{24}O_2$	142-4	12	1.4530	E
O-13170	Cyclohexyl caproic acid, ethyl ester	$C_{14}H_{26}O_2$	151-3	12	1.4510	E

* = set point

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-13171	2-(2'-Phenylethyl)-m-dioxane	$C_{12}H_{16}O_2$	140-3	12	1.5103	R
O-13172	β'-Methyl-α-cyano-δ-carboethoxybutyric acid, allyl ester	$C_{12}H_{17}O_4N$	98-103	.5	1.4371	BK
O-13173	β-Methyl-δ,δ'-bis(carboethoxy) butyric acid, ethyl ester	$C_{13}H_{22}O_6$	104-5	.5	1.4364	BT
O-13174	2,5-Dimethyl-3-octynediol-2,5	$C_{10}H_{18}O_2$	79-83	.2	1.4638	P
O-13175	N-Amyl-4-methyl-1,2,3,6-tetrahydrophthalimide	$C_{14}H_{21}O_2N$	118-21	.5	1.4923	Y
O-13176	N-Amyl-4-methylhexahydrophthalimide	$C_{14}H_{23}O_2N$	105-9	.3	1.4879	R
O-13177	β,γ-Dimethyl-γ-nitrobutyric acid, ethyl ester	$C_8H_{15}O_4N$	71-3	.3	1.4376	BK
O-13178	N-n-Butyl-4-methyl hexahydrophthalimide	$C_{13}H_{21}O_2N$	121-5	1	1.4838	Y
O-13179	2,6-Dimethyl-3-isopropyl-4-heptynediol-3,6	$C_{12}H_{22}O_2$	85-96	.2	1.4653	P
O-13180	2,7-Dimethyl-3,6-diisopropyl-4-octynediol-3,6	$C_{16}H_{30}O_2$			105-107	P
O-13181	β-Methyl-γ,γ-diacetyl butyric acid, ethyl ester	$C_{11}H_{18}O_4$	62-7	13	1.4089	BK
O-13182	N-Allyl-4-methyl hexahydrophthalimide	$C_{12}H_{17}O_2N$	116-20	1.5	1.4980	Y
O-13183	β-Methyl-γ-ethyl-γ-nitrobutyric acid, ethyl ester	$C_9H_{17}O_4N$	73-5	.2	1.4378	BK
O-13184	4-Methyl-3-isopropylpentanol-3-one-2	$C_9H_{18}O_2$	65-7	14	1.4418	N
O-13185	β-Diethylaminopropionitrile	$C_7H_{14}N_2$	130-2	97	1.4341	CD
O-13186	N-Isobutyl-4-methylhexahydrophthalimide	$C_{13}H_{21}O_2N$	124-5	2	1.4831	Y
O-13187	Pelargonic acid, ethyl ester	$C_{11}H_{22}O_2$	107-9	14	1.4197	E
O-13188	β-Morpholinopropionitrile	$C_7H_{12}ON$	88-92	1	1.4691	CD
O-13189	N-Isopropyl-4-methylhexahydrophthalimide	$C_{12}H_{19}O_2N$	107-9	2	1.4820	Y
O-13190	Butynediol dipropionate	$C_{10}H_{14}O_4$	87-9	.2	1.4520	E

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Orlando Code No.	Compound	Molecular Formula	b.p.	Pr mm	N_D^{25} or m.p.	Method
0-13191	2-Cyclohexylcyclohexanol	$C_{12}H_{22}O$	125-8	7		A
0-13192	Cyclohexylpropionic acid, ethyl ester	$C_{11}H_{20}O_2$	107-8	12	1.4460	E
0-13193	Cyclohexylpropionic acid, butyl ester	$C_{13}H_{24}O_2$	134-5	12	1.4482	E
0-13194	α-Ethyl amyl-(2-thienyl)-ketone	$C_{12}H_{18}OS$	154-6	12	1.5192	CE
0-13195	Propyl-(2-thienyl)-ketone	$C_8H_{10}OS$	111-113	12	1.5411	CE
0-13196	α-(2-thienyl)-β-methyl glycidic acid, ethyl ester	$C_{10}H_{12}O_3S$	118-123	1	1.5467	D
0-13197	α-(2-thienyl)-β-propyl glycidic acid, ethyl ester	$C_{12}H_{16}O_3S$	109-17	.5	1.5084	D
0-13198	β-Diethylaminopropionic acid, ethyl ester	$C_9H_{19}O_2N$	80-82	13	1.4304	BT
0-13199	2,6-Dimethyl-4-butyl morpholine	$C_{10}H_{21}ON$	69-71	11	1.4450	CF
0-13200	Pelargonic acid, cyclohexyl ester	$C_{15}H_{28}O_2$	98-101	0.5	1.4480	E
0-13201	N-n-Butyl-3-methyl hexahydrophthalimide	$C_{13}H_{21}O_2N$	111-115	.5	1.4864	Y
0-13202	3-Methylhexanol-3-one-2	$C_7H_{14}O_2$	63-7	15	1.4229	N
0-13203	Pelargonic acid, β-methoxy-ethyl ester	$C_{12}H_{24}O_3$	129-35	11	1.4289	E
0-13204	Diethylene glycol, monocaprate	$C_{10}H_{20}O_4$	105-7	.5	1.4401	BE
0-13205	1-Phenylcyclohexanol	$C_{12}H_{16}O$	100-2	1	58	CG
0-13206	Methyl hexyl ketone glycerol	$C_{11}H_{22}O_3$	121-4	4	1.4480	BA
0-13207	Methyl p-tolyl ketone glycerol	$C_{12}H_{16}O_3$	109-12	.1	1.5173	BA
0-13208	2,6,6-Trimethyl-2,3-bicyclo-[3,3,1] heptanediol	$C_{10}H_{18}O_2$	98-108	.1	1.4781	BR
0-13209	Phenyl propyl ketone glycerol	$C_{13}H_{18}O_3$	112-13	.5	1.5122	BA
0-13210	1,2-Hexanediol	$C_6H_{14}O_2$	78-80	.5	1.4395	BR
0-131211	3-Hydroxy-4-ethyl octanoic acid, allyl ester	$C_{13}H_{24}O_3$	102-4	.5	1.4516	BN

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Orlando Code No.	Compound	Molecular Formula	b.p.	Pr mm	N_D^{25} or m.p.	Method
O-13212	3-Methyl-4-methoxybutyrophenone	$C_{12}H_{16}O_2$	114-6	.5	1.5388	CH
O-13213	4-Methyl-1,2-cyclohexanediol	$C_7H_{14}O_2$	94-5	.5	1.4863	BR
O-13214	Diethylene glycol, monohexahydrobenzoate	$C_{11}H_{20}O_4$	124-6	.5	1.4653	F
O-13215	Diethylene glycol, monocyclohexyl acetate	$C_{12}H_{22}O_4$	126-30	.2	1.4632	BE
O-13216	Methyl-1-hydroxycyclohexyl ketone	$C_8H_{14}O_2$	89-95	13	1.4647	N
O-13217	1,2-Heptanediol	$C_6H_{14}O_2$	85-7	.5	1.4400	BR
O-13218	1,2-Undecanediol	$C_{11}H_{24}O_2$	122-5	.5	41	BR
O-13219	1-Cyclohexyl-1,2-cyclohexanediol	$C_{12}H_{22}O_2$	133-40	.5	1.4992	BR
O-13220	Mixture of 2-methyl-7-ethyl-3,4-undecanediol and 2-methyl-7-ethyl-4,5-undecanediol	$C_{14}H_{30}O_2$	112-14	.5	1.5000	BR
O-13221	3-Acetoxy-4-ethyloctanoic acid, allyl ester	$C_{15}H_{26}O_4$	96-100	.5	1.4482	E
O-13222	3-Hydroxy-4-ethyl-4-octenoic, allyl ester	$C_{13}H_{22}O_3$	105-7	.5	1.4651	BN
O-13223	Propionic acid, 1,2-hexanediol diester	$C_{12}H_{22}O_4$	78-83	.5	1.4289	E
O-13224	1,2-Nonanediol	$C_9H_{20}O_2$	106-9	.5	1.4468	BR
O-13225	N-Butyl-3-methylhexahydrophthalimide	$C_{13}H_{21}O_2N$	117-20	.5	1.4890	Y
O-13226	7-Methyl-4-(2-propenyl)-decadiene-1,9-diol-4,7	$C_{14}H_{24}O_2$	120-1	1	1.4871	BO
O-13227	7-Methyl-4-propyl decanediol-4,7	$C_{14}H_{30}O_2$	107-9	.5	1.4604	R
O-13228	Cyclohexyl (2-thienyl) ketone	$C_{11}H_{14}OS$	168-9	15	1.5590	CE
O-13229	Cyclohexylbutyric acid, methyl ester	$C_{11}H_{20}O_2$	115-8	12	1.4495	E
O-13230	Cyclohexylpropionic acid, β-methoxyethyl ester	$C_{12}H_{22}O_3$	144-5	12	1.4514	E

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Orlando Code No.	Compound	Molecular Formula	b.p.	pr mm	N_D^{25} or m.p.	Method
O-13231	Cyclohexylacetic acid, β-butoxyethyl ester	$C_{14}H_{26}O_3$	161-2	12	1.4480	E
O-13232	Cyclohexylacetic acid, cyclohexyl ester	$C_{14}H_{24}O_2$	156-7	12	1.4700	E
O-13233	Cyclohexylpropionic acid, allyl ester	$C_{12}H_{20}O_2$	126-7	12	1.4582	E
O-13234	Cyclohexylacetic acid, tetrahydrofurfuryl ester	$C_{13}H_{22}O_3$	172-5	15	1.4680	E
O-13235	3-Acetoxy-4-ethyl-4-octanoic acid, allyl ester	$C_{15}H_{24}O_4$	92-6	.5	1.4874'	BN
O-13236	1,2-Dodecanediol	$C_{12}H_{26}O_2$	125-30	.5	37-9*	BR
O-13237	3-Cyclohexyl-1,2-propanediol	$C_9H_{18}O_2$	115-8	1	1.4798	BR
O-13238	Tri-isobutylene glycols	$C_{12}H_{26}O_2$	108-15	.5	1.4440'	BR
O-13239	Butynediol-1,4, diisobutyrate	$C_{12}H_{18}O_4$	98-101	.5	1.4519'	E
O-13240	β-Ethoxyethyl methanesulfonate	$C_5H_{12}O_4S$	115-8	5	1.4322'	F
O-13241	3-Methyl-4-propoxyacetophenone	$C_{12}H_{16}O_2$	91-6	.5	1.5110'	CH
O-13242	Cyclohexyl 3-methyl-4-methoxyphenyl ketone	$C_{15}H_{20}O_2$	129-35	.5	1.5499'	CH

' = 20°

* = set point

Methods

A. Submitted from stock.

B. The Grignard Reagent was prepared in the usual manner in ether. In the preparation of compounds O-7296 and O-7297, a benzene solution of butadiene monoxide was added to the Grignard reagent and the mixture hydrolyzed after a short time. In all other proparations, ethylene oxide or propylene oxide was added to the Grignard solution, the ether was replaced with dry benzene and the mixture refluxed overnight before hydrolyzing.

C. The carbonyl compound was refluxed with a 10% excess of the given cyano-acetic ester in the presence of the ammonium acetate -acetic acid catalyst. The water formed during the reaction was removed by means of the water-benzene azeotrope. (Cope, et al., J. Am. Chem. Soc., 63, 3452 (1941) . The resulting alkonyl-cyanoacetic ester was hydrogenated in ethyl alcohol over PtO_2 at low pressure.

D. The Darzens reaction was carried out by adding in small quantities 1.5 mole of 95% $NaOCH_3$ to a stirred solution of 1 mole of carbonyl compound and 1.5 mole of haloester, preferably chloroester, in 400-500 cc of dry ether. The temperature was maintained at 0-5°C for 5-6 hours and at room temperature for 15 hours. Hydrolyzed with dilute acid.

E. Direct esterification accomplished by refluxing the alcohol and acid with a catalytic amount of p-toluenosulfonic acid in the presence of a solvent of suitable nature to permit the water formed during the reaction to be removed.

F. Esterification carried out by adding the theoretical amount of the acid chloride to a solution of the alcohol on dry pyridine at approximately 10°C.

G. Hexyne-1 was added to a suspension of $NaNH_2$ in dry benzene. The carbonation was carried out by passing CO_2 through the refluxing solution for 2-3 hours.

H. Esterification as in Method F except that the acid chloride was added to the refluxing solution.

I. The aldehyde or ketone and alcohol were refluxed in the presence of an acid catalyst and of a solvent of such nature that the water could be removed as formed. Dry HCl was used as the catalyst for compounds O-7118 and O-7130, while p-toluenosulfonic acid was used in all other cases. Compounds O-7493, and O-13002 required no refluxing, as water separated soon after addition of the catalyst. Compound O-7363 was stirred at 10°C instead of refluxing.

J. By-product obtained in the reaction of amyl bromide with sodium acetylide in liquid ammonia.

K. Condensation carried out by adding the ketone to a suspension of sodium acetylide in liquid ammonia. Stirred 1-10 hours and hydrolyzed with NH_4Cl.

L. Acylation accomplished by refluxing the alcohol with acetic anhydride and distilling off the acetic acid formed.

M. The carbonyl compound, hydroxylamine hydrochloride, and a slight excess of pyridine were refluxed in an alcohol solution 1-3 hours and then poured into a large volume of water.

N. The acetylenic compound was hydrated by heating for an hour in dilute acetic acid in the presence of small amounts of $HgSO_4$ and H_2SO_4.

O. The Grignard reagent of the acetylenic compound was prepared by adding the hydrocarbon or acetylenic carbinol to EtMgBr in ether. Excess paraformaldehyde was added. Stirred over night and hydrolyzed with saturated NH_4Cl solution.

P. The disodium salt of the acetylenic carbinol was prepared by adding the alcohol to a suspension of $NaNH_2$ in dry benzene. The given ketone was added, refluxed 3-7 hours, and hydrolyzed with dilute hydrochloric acid.

Q. Hydrogenation carried out in 95% ethyl alcohol over Raney Ni at high pressure and at room temperature.

R. Hydrogenation in 95% ethyl alcohol over PtO_2 at low pressure at room temperature.

S. The aldehyde and alkyl mercaptan were stirred 2 hours at room temperature with a catalytic amount of p-toluene-sulfonic acid.

T. The acetylenic Grignard reagent was prepared as described in method O and then the given ketone added. Hydrolyzed with dilute HCl.

U. An ester interchange was effected by refluxing a methyl or ethyl ester with an excess of a higher boiling alcohol and distilling off the methyl or ethyl alcohol formed. A small piece of sodium served as the catalyst.

V. Ester interchange as described in Method U except that p-toluenesulfonic acid was used as the catalyst.

W. Eastman practical grade undecylenic acid was fractionated in vacuo through a four foot helice-packed column using a total reflux-partial take-off head.

X. The Crossed Cannizarro reaction was carried out by adding an excess of 50% KOH at 70° to an alcoholic solution of the tetrahydrobenzladehyde and a large excess of formalin. Refluxed 4-5 hours and poured into a large volume of water.

Y. The properly substituted phthalic anhydride and amine were mixed together, heated if necessary to complete the reaction, and distilled. Anhydrides used included the 3-methyl, 4-methyl and 3,6-endomethylenetetrahydro and hexahydrophthalic, and phthalic anhydrides.

Z. The acid chloride was added to a large excess of amine.

AA. Ethylene or propylene oxide was added to a well-stirred slurry of $AlCl_3$ in the aromatic hydrocarbon. The temperature was kept below 10°C.

AB. 1,2,3,6-Tetrahydrophthalic anhydride was added to the given sodium alcoholate in benzene and the mixture refluxed 3 hours. Acidification of the acid fraction yielded the half ester.

AC. See Ruggli and Maeder, Helv. Chim. Acta, 27, 436 (1944). Chem. Abstracts, 39, 62 (1945).

AD. The Friedel-Crafts reaction was carried out by adding $AlCl_3$ to a solution of succinic anhydride in the aromatic hydrocarbon.

AE. A catalytic amount of 50% KOH solution was added to an alcoholic solution of the compound containing the active methylene group and an excess of formalin. Warmed 2 to 4 hours and poured into a large volume of water.

AF. Benzaldehyde and levulinic acid were condensed in the presence of NaOH. The benzallevulinic acid was not isolated as such, but was esterified in the usual manner (see method E) and the ester obtained.

AG. Benzaldehyde was condensed with the various malonic esters in a benzene solution in the presence of a morpholine-acetic acid catalyst. The water formed was removed by means of the water-benzine azeotrope.

AH. Sodium p-toluenesulfinate and the given halide were refluxed 5-7 hours in a dilute alcoholic medium. 2-Chlorocyclohexanone was used in the preparation of compound O-7263. The sulfones which crystallized on dilution and cooling were recrystallized from dilute alcohol.

AI. The β-ketoacid was converted to the unsaturated lactone by heating with acetic anhydride.

AJ. The reaction of benzylcyanide with formalin solution in the presence of an alkaline catalyst at room temperature yielded the substituted styrene rather than the expected diol.

AK. The various sulfides, prepared by the reaction of an alkyl halide with a sodium mercaptide in a dilute alcoholic solution, were readily oxidized to sulfones by 30% H_2O_2 in an acetic acid solution at 80-100°C. The sulfones crystallized on cooling.

AL. Nitroparaffins and aldehydes were condensed in the presence of alcoholic NaOH. The product was distilled at reduced pressure from the reaction mixture after acidification with hydrochloric acid.

AM. Butyraldehyde and levulinic acid were condensed as described in method AF.

AN. α-Bromoesters were reacted with the sodium mercaptides in a dilute alcohol solution to form the various alkyl carboalkoxymethyl sulfides which were then oxidized to sulfones as described in method AK.

AO. Reduction was accomplished by slowly distilling off the acetone formed by refluxing the ketone with an excess of aluminum isopropylate in toluene.

AP. The appropriate sodium enolate was prepared by adding the compound containing the active methylene group to sodium methylate suspended in an ether-benzene solution. The lone exception was in the case of benzyl nitrile where sodium amide was used as the base. Butadiene monoxide was added to the enolate and the mixture refluxed 1-4 hours. Hydrolyzed with dilute acid. Propyleno oxide was used to prepare compound O-7351.

AQ. Oil of pimenta leaf was fractionated in vacuo through a four-foot helice packed column with a total reflux partial take-off head.

AR. The oxime was reacted with the given acid chloride in the presence of a pyridine-benzene solvent. It was found to be advantageous to reflux the solution for 2 hours.

AS. Crotonaldehyde was added to a solution of hydroxylamine prepared by adding the calculated amount of sodium carbonate solution to an aqueous solution of hydroxylamine hydrochloride. The solution was continuously extracted, stripped, and the oxime recrystallized twice.

AT. 2,4-Dimethyl and 2,6-Dimethyl-1,2,3,6-tetrahydrobenzaldehyde was prepared by heating crotonaldehyde with isoprene and piperylene respectively to 170° in a metal bomb. The initial reaction carried the temperature to about 230° in each case. The product was distilled from the reaction mixture.

AU. A gentle stream of air was blown through the aldehydes for 15 hours.

AV. Benzyl mercaptan and acrylonitrile were condensed at 40° in the presence of a catalytic amount of $NaOCH_3$. The resulting nitrile was converted to the ester by heating 4 hours with H_2SO_4 and the proper alcohol. The ester was oxidized as described in method AK.

AW. The sodium alcoholate was prepared by adding the given alcohol to a suspension of $NaNH_2$ in ether-benzene. The allyl halide was then added and the mixture refluxed 12 hours.

AX. The allyl halide was added to the sodium enolate of cyclohexanone, or one of its derivatives, prepared by adding the ketone to $NaNH_2$ in benzene. After the initial evolution of heat, the mixture was refluxed three hours.

AY. The nitrile was converted to the lactone by refluxing with 50% H_2SO_4 in acetic acid solvent.

AZ. The aldehyde and diol were heated together in benzene with a small amount of p-toluenesulfonic acid until all the diol went into solution.

BA. The aldehyde or ketone and glycerol were refluxed in the presence of p-toluenesulfonic acid and a suitable solvent so that the water could be removed as formed. As the reaction mixture consisted of two phases it was found that the reaction time could be considerably shortened by stirring.

BB. The aldehyde and acetyl or acetonylacetone were refluxed in the presence of morpholine and acetic acid; the water formed was continually removed by distillation with benzene.

BC. The sodium salt of acetyl acetone was prepared by adding the diketone to $NaOCH_3$ in benzene. Allyl bromide was then added and the mixture refluxed overnight.

BD. The alkyl chlorocarbonate was added to a cold benzene solution of the phenol in the presence of pyridine.

BE. Esterification as described in Method E except that only one-half the theoretical amount of acid was used, thus causing the half ester to be the main reaction product.

BF. An aqueous solution of ethylene chlorohydrin and the sodium salt of the given acid was refluxed 6-8 hrs.

BG. 2-Chlorocyclohexanona, prepared in 65% yield by chlorination of cyclohexanone in an aqueous suspension, was refluxed 20 hrs. in acetic acid with an excess of sodium acetate.

BH. Equivalent amounts of tetrahydrophthalic anhydride and diethyl amine were mixed together; the product was taken up in benzene and converted to the acid chloride by means of $SOCl_2$. The acid chloride was esterified in the usual manner, using the desired alcohol and pyridine.

BI. Acrylonitrile was slowly added to a solution of the compound containing the active methylene group in ethyl or tertiary butyl alcohol at 0-5°C in the presence of a catalytic amount of 50% KOH. Product recrystallized from dilute alcohol. Compound O-13013 was saponified with KOH solution to yield the dibasic acid.

BJ. Trifluorotoluene was nitrated at 10-15°C by slowly adding it to a mixture of fuming nitric acid and sulfuric acid.

BK. A catalytic amount of 95% $NaOCH_3$ was dissolved in absolute ethanol. To this was added a mixture of the two reactants -- the α,β-unsaturated ketone or ester, mesityl oxide or ethyl crotonate; and the compound containing the active methylene group, ethyl cyanoacetate, nitroparaffins or acetyl acetone. The reaction mixture was stirred and heated several hours, then hydrolyzed. (A molar amount of $NaOCH_3$ was used in the preparation of compound O-13183).

BL. Allyl benzene, prepared in 76% yield from allyl bromide and phenylmagnesium bromide, was refluxed 20 hours in a benzene solution containing silver benzoate and iodine. The resulting dibenzoate was hydrolyzed with dilute KOH.

BM. Acetic anhydride was slowly added to trifluorotoluidine. Product recrystallized from ethyl alcohol.

BN. The Reformatsky reaction was carried out by adding Zn foil to a previously dried solution of carbonyl compound and bromoester in benzene.

BO. A mixture of acetylacetone, acetonylacetone, styrene oxide, or an ethyl ester and an excess of allylic halide was added to magnesium turnings covered with dry ether. Hydrolyzed with saturated NH_4Cl solution.

BP. A mixture of m-trifluorotoluidine and the haloester were warmed and stirred for 24-48 hrs. Compound O-13073 was prepared by alkaline saponification of a mixture of compounds O-13020 and O-13021.

BQ. The acyloin reaction was carried out using powdered sodium in ether as described in "Organic Syntheses", Col. Vol. II, pg. 114 (1943).

BR. The given olefin, prepared in most cases by dehydration of an alcohol over alumina, was oxidized by H_2O_2 in acetic acid solution at 65-80°C. The oxidizing mixture was heated at 80-5° for one hour before the olefin was added.

BS. Styrene oxide and the given alcohol or cellosolve were warmed 4-5 hrs. in the presence of a catalytic amount of H_3PO_4.

BT. Alcoholysis of a nitrile accomplished by warming a solution of the nitrile in the dosired alcohol with conc. $H_2SO_4 \cdot H_3PO_4$ was used in the preparation of compound O-13067.

BU. Anhydrous HCl was bubbled into a solution of resorcinol, $ZnCl_2$ and acrylonitrile in dry ether. After standing 2 days the solid material was filtered, hydrolyzed with water and recrystallized from dilute alcohol.

BV. Styrene oxide, the given acid, and a catalytic amount of p-toluenesulfonic acid were refluxed in a benzene solution and the water was removed as formed.

BW. Acrylonitrile was slowly added to the given alcohol containing a catalytic amount of 40% KOH. Stirred 5-10 hours, neutralized, and distilled at reduced pressure.

BX. The cyclohexyl ester was made by refluxing the ethyl ester with a large excess of cyclohexanol, distilling off the ethyl alcohol as formed.

BY. The appropriate phenol dissolved in excess aqueous NaOH was treated in the cold with epichlorohydrin, and allowed to stand 12-16 hours. Compounds O-13142 and O-13144 were by-products of the reactions.

BZ. The acetate was saponified by refluxing with alcoholic KOH.

CA. The corresponding epoxide was hydrolyzed with aqueous HCl.

CB. The corresponding epoxide was hydrolyzed with dilute sulfuric acid.

CC. Benzoyl chloride was heated at 200° with cuprous cyanide.

CD. The secondary amine was added to acrylonitrile, and the mixture allowed to stand overnight at room temperature.

CE. The ketone was prepared by a Friedel-Crafts reaction of the acid chloride on thiophene, in benzene solution using $SnCl_4$.

CF. β,β'-dichlorodiisopropyl ether was refluxed with a large excess of n-butyl amine.

CG. Grignard reaction of phenyl magnesium bromide and cyclohexanone.

CH. Friedel-Crafts reaction of an acid chloride on an alkyl cresol ether at 10° in a benzene solution.

REEL - C

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A.T.I.

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ABSTRACT:

743 organic compounds have been prepared and tested for use as insect repellents. Of these compounds, 63 exceeded the minimum repellency criteria of 180 minutes against aedes aegypti and/or 120 minutes against aedes quadrimaculatus. Three compounds which did not exceed the minimal values were found to be superior to dimethyl phthalate on paired testing. Among the compounds tested after impregnation in cloth 14 were repellent against A. aegypti for more than ten days. Several were still effective after 15 and 20 days when the tests were terminated. The most promising insect repellents are 0-7021, 0-7026, 0-7090, 0-7102, and 0-7145.

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