

Tables for Qualitative Analysis

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## Alkanes

Alkane Name	bp (EC)	mp (EC)	$n_D$ (20 EC)
Pentane	36		1.3575
Cyclopentane	49		1.4065
2,2-Dimethylbutane	50		1.3688
2-Methylpentane	60		1.3715
3-Methylpentane	63		1.3765
Hexane	69		1.3749
Methylcyclopentane	72		1.4097
2,2-Dimethylpentane	79		1.3822
2,4-Dimethylpentane	80		1.3815
Cyclohexane	81		1.4262
2-Methylhexane	90		1.3849
3-Ethylpentane	93		1.3934
Heptane	98		1.3876
2,2,4-Trimethylpentane	99		1.3915
Methylcyclohexane	101		1.4222
2-Methylheptane	118		1.3950
Cycloheptane	119		1.4449
<i>trans</i> -1,2-Dimethylcyclohexane	123		1.4270
Octane	126		1.3974
Nonane	151		1.4050
Cyclooctane	151	13	1.4586
Decane	174		1.4119
Pentadecane	271	10	1.4319
Heptadecane	302	22	1.4348

## Alkenes and Alkynes

Alkene or Alkyne	bp (EC)	$n_D$ (EC)
1-Pentene	30	1,3715
<i>trans</i> -2-Pentene	36	1.3793
Cyclopentene	44	1.4225
4-Methyl-1-pentene	54	1.3828
1-Hexene	63	1.3879
2-Ethyl-1-butene	65	1.3969
<i>trans</i> -1,3-Hexadiene	65	1.4060
1-Hexyne	71	1.3989
<i>trans</i> -3-Hexene	67	1.3943
2,4-Hexadiene	82	1.4529
3-Hexyne	82	1.4112
1-Heptene	94	1.3998
Cyclohexene	83	1.4465
2-Hexyne	84	1.4135
Cycloheptene	114	1.4580
1-Octene	121	1.4087
<i>trans</i> -4-Octene	122	1.4116
<i>trans</i> -2-Octene	125	1.4132
1-Octyne	126	1.4159
Styrene	145	1.5468
1-Nonene	147	1.4160
Limonene	178	1.4743

## Aromatic Hydrocarbons

Aromatic Compound	mp (EC)	bp (EC)	n <sub>D</sub> (20 EC)
Benzene	5	80	1.5011
Toluene		111	1.4961
Ethylbenzene		136	1.4959
<i>p</i> -Xylene	13	138	1.4958
<i>m</i> -Xylene		139	1.4972
<i>o</i> -Xylene		144	1.5054
Isopropylbenzene		152	1.4915
<i>n</i> -Propylbenzene		159	1.4920
mesitylene		165	1.4994
<i>tert</i> -Butylbenzene		169	1.4920
1,2,4-Trimethylbenzene		169	1.5048
<i>sec</i> -Butylbenzene		173	1.4890
3-Isopropyltoluene		175	1.4920
1,2,3-Trimethylbenzene		176	1.5139
4-Isopropyltoluene		177	1.4900
2-Isopropyltoluene		178	1.4990
<i>n</i> -Butylbenzene		183	1.4890
1,2-Diethylbenzene		183	1.5020
1,4-Diethylbenzene		184	1.4950
Cyclohexylbenzene		236	1.5329
1-Methylnaphthalene		245	1.6174
Diphenylmethane	27	264	1.5753
2-Methylnaphthalene	38	240	
1,2-Diphenylethane	53	284	
Pentamethylbenzene	54	232	
Biphenyl	69	254	
1,2,4,5-Tetramethylbenzene	80	198	
Naphthalene	82	218	
Triphenylmethane	92	358	
Acenaphthene	96	278	
Phenanthrene	101	340	
Fluorene	114	295	
<i>trans</i> -Stilbene	124		
Anthracene	216		

## Alkyl Chlorides

Alkyl Chloride	bp (EC)	$n_D$ (20 EC)
2-chloropropane	37	1.3777
1-Chloro-1-propene	37	1.4054
Allyl chloride	45	1.4257
<i>tert</i> -Butyl chloride	51	1.3848
Chloroform	61	1.446
2-Chlorobutane	68	1.3971
Isobutyl chloride	68	1.3975
1,1,1-Trichloroethane	75	1.4366
Carbon tetrachloride	77	1.4630
1-Chlorobutane	78	1.4021
1-Chloro-2,2-dimethylpropane	84	1.4044
1,2-Dichloroethane	84	1.4443
2-Chloro-2-methylbutane	86	1.4055
1,2-Dichloropropane	97	1.4069
3-Chloropentane	98	1.4082
1-Chloro-3-methylbutane	101	1.4096
1-Chloropentane	108	1.4120
Chlorocyclopentane	115	1.4510
3-Chloro-3-methylpentane	116	1.421
1,1,2,2-Tetrachloroethene	121	1.5055
3-Chlorohexane	123	1.4163
2-Chlorohexane	125	1.4142
1,3-Dichloropropane	125	1.449
1-Chlorohexane	134	1.4196
Chlorocyclohexane	143	1.462
1-Chloro-3-bromopropane	143	1.4861
1-Chloroheptane	159	1.4256
Benzyl chloride	159	1.4256
1-Chlorooctane	180	1.4305

## Alkyl Bromides

Alkyl Bromide	bp (EC)	n <sub>D</sub> (20 EC)
Bromoethane	38	1.4239
2-Bromopropane	60	1.4251
1-Bromopropane	71	1.4343
Allyl bromide	71	1.4655
tert-Butyl bromide	73	1.4278
2-Bromobutane	91	1.4367
Isobutyl bromide	93	1.4350
Dibromomethane	99	1.538
1-Bromobutane	102	1.4401
2-Bromopentane	117	1.4413
3-Bromopentane	119	1.4441
1-Bromo-3-methylbutane	120	1.4420
3-Bromo-3-methylpentane	130	1.4525
1-Bromopentane	130	1.4443
1,2-Dibromoethane	132	1.5379
Bromocyclopentane	137	1.489
1-Bromo-3-Chloropropane	143	1.4861
Bromoform	151	1.598
1-Bromohexane	155	1.4475
Bromocyclohexane	165	1.495
1,3-Dibromopropane	167	1.5225
1,4-Dibromobutane	198	1.5186
1-Bromooctane	201	1.4524
1-Bromononane	221	1.4542
1-Bromodecane	241	1.4557
Carbon tetrabromide	mp = 90 EC	

## Aryl Halides

Aryl Halide	bp (EC)	mp (EC)	n <sub>D</sub> (20 EC)
Chlorobenzene	132		1.5241
Bromobenzene	156		1.5597
2-Chlorotoluene	159		1.5250
3-Chlorotoluene	162		1.521
4-Chlorotoluene	162	7	1.521
1,3-Dichlorobenzene	173		1.5459
1,2-Dichlorobenzene	180		1.5515
2-Bromotoluene	182		1.5565
3-Bromotoluene	184		1.551
4-Bromotoluene	184	28	1.5490
Iodobenzene	188		1.6200
2,6-Dichlorotoluene	199		1.5510
2,4-Dichlorotoluene	200		1.549
3,4-Dichlorotoluene	201		1.5472
3,5-Dichlorotoluene	201	26	
3-Iodotoluene	204		1.6053
1,2,4-Trichlorobenzene	213	17	1.5671
1,2-Dibromobenzene	225	7	1.6155
1-Chloronaphthalene	259		1.633
1-Bromonaphthalene	281	6	1.658
2,4,6-Trichlorotoluene		34	
4-Iodotoluene	211	35	
1,2,3,4-Tetrachlorobenzene	275	46	
1,2,3,5-Tetrachlorobenzene	246	51	
1,4-Dichlorobenzene	173	53	
1,3,5-Trichlorobenzene	208	63	
4-Chlorobiphenyl	293	77	
1-Chloroanthracene		81	
2,4,5-Trichlorotoluene		82	
1,4-Dibromobenzene	219	89	
4,4'-Dichlorobiphenyl	315	149	

## Alcohols—Liquid

Name of compound	B.p. (EC)	M.p. (EC)	$n_D^{20}$	Melting points of derivatives, (EC)		
				3,5-Dinitrobenzoate	4-Nitrobenzoate	"-Naphthylurethane
Methanol	65		1.3290	108	96	124
Ethanol	78		1.3610	93	57	79
2-Propanol	82		1.3772	123	110	106
2-Methyl-2-propanol	83	25	1.3870	142	116	101
3-Buten-2-ol	95		1.4137	54	43	
2-Propen-1-ol	97		1.4135	50	28	108
1-Propanol	97		1.3850	74	35	80
2-Butanol	100		1.3970	76	25	97
2-Methyl-2-butanol	102		1.4052	116	85	72
2-Methyl-1-propanol	108		1.3960	87	69	104
3-Buten-1-ol	113		1.4224	59		
3-Methyl-2-butanol	114		1.3973	76		109
3-Pentanol	116		1.4103	101	17	95
1-Butanol	117		1.3990	64	70	71
2-Pentanol	120		1.4060	62	17	75
3 3-Dimethyl-2-butanol	120		1.4148	107		
2 3-Dimethyl-2-butanol	120		1.4140	111	82	101
3-Methyl-3-pentanol	123		1.4166	96	67	84
2-Methyl-2-pentanol	123		1.4113	72	70	104
2-Methoxyethanol	125		1.4024		50	113
1-Chloro-2-propanol	127		1.4392	77		
2-Methyl-3-pentanol	128		1.4168	85		
2-Methyl-1-butanol	129		1.4107	70		82
2-Chloroethanol	130		1.4419	95		101
4-Methyl-2-pentanol	132		1.4100	65	26	88
3-Methyl-1-butanol	132		1.4085	61	21	68
2-Ethoxyethanol	135		1.4080	75		67



## Alcohols—Liquid (Continued)

Name of compound	B.p. (°C)	M.p. (°C)	$n_D^{20}$	Melting points of derivatives, (°C)		
				3,5- Dinitro- benzoate	4-Nitro- benzoate	"-Naphthyl- urethane
3-Hexanol	136		1.4159	97		72
2,2-Dimethyl-1-butanol	137		1.4208	51		81
1-Pentanol	138		1.4099	46	oil	68
2-Hexanol	139		1.4126	39	40	61
2,4-Dimethyl-3-pentanol	140		1.4226		155	99
Cyclopentanol	141		1.4530	115	62	118
4-Methyl-1-pentanol	153		1.4153	72		58
4-Heptanol	156		1.4205	64	35	80
1-Hexanol	157		1.4178	60	oil	62
2-Heptanol	159		1.4210	49		54
Cyclohexanol	161		1.4641			
3-Chloro-1-propanol	161		1.4450	77	oil	76
Furfuryl alcohol	172		1.4863	81	76	130
1-Heptanol	177		1.4245	47	oil	62
2-Octanol	179		1.4265	32	28	63
2-Ethyl-1-hexanol	185		1.4328			60
1,2-Propanediol	187		1.4316		127	
1-Octanol	195		1.4293	62	17	67
1,2-Ethanediol	198		1.4319	169	140	176
2-Nonanol	198		1.4290	43		56
I-Linalool	199		1.4624		70	53
1-Phenylethanol	202	20	1.5244	95	43	106
Benzyl alcohol	206		1.5395	113	85	134
1-Nonanol	213		1.4311	52	60	66
1,3-Propanediol	215		1.4398	178	119	164
2-Phenylethanol	220		1.5240	108	62	119
Geraniol	230		1.4766	63	35	48
1-Decanol	231		1.4368	58	30	73
3-Phenyl-1-propanol	237		1.5356	92	47	

## Alcohols—Solids

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives, (°C)		
			3,5-Dinitrobenzoate	4-Nitrobenzoate	"-Naphthylurethane
1-Phenylethanol	20	204	95	43	106
1-Dodecanol	24	259	60	45	80
Cyclohexanol	25	161	113	50	129
2-Methyl-2-propanol	25	83	142	116	101
3-Nitrobenzyl alcohol	27				
Cinnamyl alcohol	33	257	121	78	114
"-Terpineol	36	221	79	97	152
1-Tetradecanol	39	286	67	51	82
Pinacol	43	172			
Menthol	44	216	153	61	126
1-Hexadecanol	50	344	66	58	82
2,2-Dimethyl-1-propanol	52	113			100
Piperonyl alcohol	58				
4-Methylbenzyl alcohol	60	217	118		
1-Octadecanol	60	332	77	64	
1,2-Diphenylethanol	67				
Benzhydrol	68	299	141	132	139
2-Nitrobenzyl alcohol	74				
2-Chlorobenzyl alcohol	74			94	
4-Chlorobenzyl alcohol	75				
4-Nitrobenzyl alcohol	93		157		
Benzoin	137			123	140
Lanosterol	140		201		
Cholesterol	148	360 <sup>d</sup>	195	190	176
Triphenylmethanol	161	380			
<i>d</i> -Borneol	208i	212	155	137	132
<i>d, l</i> -Isoborneol	212i		140	129	

## Ethers

Name of compound	B.p. (°C)	M.p. (°C)	$n_D^{20}$	d <sub>20</sub> (g/ml)	Bromo derivative m.p. (°C)
Furan	31		1.4216	0.937	
Ethyl ether	35		1.3526	0.714	
Ethyl vinyl ether	36		1.3768	0.759	
Methyl n-propyl ether	39		1.3579	0.736	
Ethyl isopropyl ether	53		1.3698	0.721	
tert-Butyl methyl ether	55		1.3689	0.741	
Ethyl n-propyl ether	64		1.3695	0.739	
Tetrahydrofuran	66		1.4070	0.887	
Isopropyl ether	68		1.3688	0.726	
2-Methyltetrahydrofuran	79		1.4056	0.855	
Ethylene glycol dimethyl ether	85		1.3797	0.867	
3,4-Dihydropyran	86		1.4400	0.923	
Tetrahydropyran	88		1.4210	0.881	
n-Propyl ether	90		1.3883	0.747	
n-Butyl vinyl ether	94		1.4010	0.774	
1,4-Dioxane	101	12	1.4232	1.03	
,B-Chloroethyl ethyl ether	107		1.411	0.989	
1,2-Epoxy-3-chloropropane	117		1.438	1.18	
Isobutyl ether	123		1.3888	0.761	
n-Butyl ether	142		1.3989	0.768	
Anisole (methoxybenzene)	155		1.5221	0.994	61 di
Diethylene glycol dimethyl ether	162		1.4099	0.944	
o-Methylanisole	171		1.5161	0.985	64 mono
Phenetole (ethoxybenzene)	172		1.5080	0.966	
p-Methylanisole	174		1.5112	0.970	
m-Methylanisole	176		1.5130	0.969	
2,2 -Dichloroethyl ether	178		1.4568	1.22	
n-Pentyl ether	188		1.416	0.783	
3-Chloroanisole	194		1.5362	1.16	
2-Chloroanisole	195		1.5445	1.12	
4-Chloroanisole	200		1.5358	1.16	

**Ethers (Continued)**

Name of compound	B.p. (°C)	M.p. (°C)	$n_D^{20}$	d <sub>20</sub> (g/ml)	Bromo derivative m.p. (°C)
1,2-Dimethoxybenzene (veratrole)	207	22	1.5287	1.08	93 <i>di</i>
Butyl phenyl ether	210		1.4970	0.935	
1,3-Dimethoxybenzene	217		1.4233	1.055	140 <i>di</i>
n-Hexyl ether	229		1.4204	0.793	
Safrole	233	11	1.5383	1.100	108 <i>tri</i>
4-Propenylanisole (anethole)	235	22	1.5600	0.988	108 <i>tri</i>
2-Nitroanisole	277	10	1.562	1.25	
Benzyl ether	298	2	1.5610	1.04	108 <i>di</i>
Phenyl ether	258	28	1.5826	1.07	55 <i>di</i>
2-Ethoxynaphthalene	282	36	1.5975 <sup>36</sup>	1.061	66 <i>mono</i>
3-Nitroanisole	258	39		1.373	
1,2,3-Trimethoxybenzene	241	47			73 <i>tri</i>
4-Iodoanisole	240	52			
1,3,5-Trimethoxybenzene	255	53			130 <i>di</i>
4-Nitroanisole	274	54			
1,4-Dimethoxybenzene	213	56			142 <i>di</i>
1,4-Diethoxybenzene	246	72			
2-Methoxynaphthalene	273	73			
1,2-Diphenoxyethane		98			135 <i>di</i>

## Aldehydes—Liquid

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	B.p. (°C)	Semi- carbazone	2,4-Dinitro- Phenyl- hydrazone	Phenyl- hydrazone	Oxime
Acetaldehyde	1.3321	20	169	168	67	47
Propionaldehyde	1.3650	48	89	150	oil	40
Glyoxal (m.p. = 15°C)	1.4087	50	270	328	180	178
2-Propenal (acrolein)	1.4025	52	171	165	51	
Isobutyraldehyde	1.3723	64	126	187	oil	oil
2-Methyl-2-propenal	1.4160	68	198	206	74	
n-Butyraldehyde	1.3790	75	96	123	95	oil
Trimethylacetaldehyde	1.3794	75	190	210		41
Chloroacetaldehyde	1.4036	86	148			oil
3-Methylbutanal	1.3919	93	107	123	oil	49
Pentanal (valeraldehyde)	1.3942	103		98		52
2-Butenal (crotonaldehyde)	1.4365	104	199	190	56	119
2-Ethylbutanal	1.4018	117	99	129		
4-Methylpentanal	1.4010	121	127	99		oil
Paraldehyde (m.p. = 12°C)		125	169	168	57	47
Hexanal	1.4035	131	106	104		51
5-Methylhexanal		144	11.	117		
Heptanal	1.4125	155	109	108		57
Furfural	1.5260	162	202	230	97	92
Octanal	1.4183	171	101	106		60
Benzaldehyde	1.5450	179	222	237	158	35
Nonanal	1.4240	185	100	100		64
Glutaraldehyde	1.3755	189				178
Phenylethanal (m.p. = 34°C)	1.5290	194	153	121	62	100
Salicylaldehyde	1.5720	197	231	252	142	63
3-Methylbenzaldehyde	1.5410	199	204	195	91	60
2-Methylbenzaldehyde	1.0390	200	209	194	106	49

## Aldehydes—Liquid (Continued)

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	B.p. (°C)	Semi- carbazone	2,4-Dinitro- Phenyl- hydrazone	Phenyl- hydrazone	Oxime
4-Methylbenzaldehyde	1.5490	205	234	234	113	80
Decanal	1.4280	207	102	104		69
2-Chlorobenzaldehyde (m.p. = 11°C)	1.5660	214	230	209	86	103
3-Chlorobenzaldehyde (m.p. = 17°C)	1.5640	214	228	256	134	70 (118)
3-Methoxybenzaldehyde	1.5530	230	233		76	40
3-Bromobenzaldehyde	1.5940	234	228		141	72
2-Ethoxybenzaldehyde (m.p. = 20°C)	1.5430	247	219			59
4-Methoxybenzaldehyde	1.5730	248	210	254	120	64 (133)
Cinnamaldehyde	1.6220	252	216	255	168	65 (138)

## Aldehydes—Solid

Melting points of derivatives (EC)

Name of compound	M.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
1-Naphthaldehyde (b.p. = 292 <sup>EC</sup> )	34	221		80	98
Phenylethanal (b.p. = 195 <sup>EC</sup> )	34	163	121	62	100
Piperonal	37	234	266	102	146
2-Methoxybenzaldehyde	39	215	254		92
4-Diethylaminobenzaldehyde	41	241		103	93
3,4-Dichlorobenzaldehyde	44		301		120
2-Nitrobenzaldehyde	44	256	265	156	102 (154)
3,4-Dimethoxybenzaldehyde	45	177	261	121	95
4-Chlorobenzaldehyde	48	233	254	127	110 (146)
2,3-Dimethoxybenzaldehyde	54	231		138	99
4-Bromobenzaldehyde	57	229	128 (257)	113	157 (111)
3-Nitrobenzaldehyde	58	246	293	124	122
2-Naphthaldehyde	60	245	270	206	156
3,5-Dichlorobenzaldehyde	65			106	112
2,6-Dichlorobenzaldehyde	71				150
2,4-Dimethoxybenzaldehyde	71				106
4-Aminobenzaldehyde	72	153		156	124
2-Chloro-4-nitrobenzaldehyde	74	234	247d	154	
2,4-Dichlorobenzaldehyde	74				137
4-Dimethylaminobenzaldehyde	74	222	325	148	185
3,4,5-Trimethoxybenzaldehyde	78	219			84
2-Chloro-5-nitrobenzaldehyde	79		277		176
4-Hydroxy-3-methoxybenzaldehyde	81	230	271d	105	122
3,5-Dibromosalicylaldehyde	85				220
Isophthaldehyde	89			242	180
3-Hydroxybenzaldehyde	104	198	257d	131	90
5-Bromosalicylaldehyde	106	297d			126

## Aldehydes—Solid (Continued)

Melting points of derivatives (EC)

Name of compound	M.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
4-Nitrobenzaldehyde	106	221	322	159	133
4-Hydroxybenzaldehyde	116	224	271	184	72 (112)
Terphthalaldehyde	116			278d	200
2,4,6-Trimethoxybenzaldehyde	118				203
5-Nitrosalicylaldehyde	126				218
2,4-Dihydroxybenzaldehyde	136	260d	286	158	192
3,4-Dihydroxybenzaldehyde	154	230d	275d	175d	157
3,5-Dihydroxybenzaldehyde	156	223			
Benzaldehyde-3-carboxylic acid	175	265		164	188d
Benzaldehyde-4-carboxylic acid	256			226	210



## Ketones—Liquid

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	B.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
Acetone	1.3590	56	190	128	42	59
3-Buten-2-one	1.4110	81	141			
2-Butanone	1.3790	82	146	117	oil	oil
3-Butyn-2-one	1.4060	86		181		
3-Methyl-2-butanone	1.3880	94	114	120	oil	oil
3-Methyl-3-buten-2-one		98	173	181		
Cyclobutanone	1.4210	100		146		
3-Pentanone	1.3920	102	139	156	oil	oil
2-Pentanone	1.3900	102	112	144	oil	oil
1-Penten-3-one	1.4200	103		129		
3,3-Dimethyl-2-butanone	1.3960	106	158	125	oil	79
1-Methoxy-2-propanone	1.3970	115		163		
4-Methyl-2-pentanone	1.3960	117	135	95		oil
3-Methyl-2-pentanone	1.4000	118	95	71		oil
Chloroacetone	1.4320	119	150	125		oil
3-Penten-2-one	1.4370	122	142	155		
2,4-Dimethyl-3-pentanone	1.4000	124	160	88		
3-Hexanone	1.4000	125	113	130		oil
4,4-Dimethyl-2-pentanone	1.4180	125		100		
2-Hexanone	1.4000	128	125	106	oil	49
2,3-Hexanedione	1.4130	128				175 <i>di</i>
5-Hexen-2-one	1.4190	130	102	108		oil
4-Methyl-3-penten-2-one	1.4450	130	164	206	142	49
Cyclopentanone	1.4370	131	210	146	55	56
5Methyl-3-hexanone		136	152			
2-Methyl-3-hexanone	1.4060	136	119			
2,4-Pentanedione	1.4520	139	209 <i>di</i>	209		149 <i>di</i>
4-Heptanone	1.4070	144	132	75		oil

## Ketones—Liquid (Continued)

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	B.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
1-Hydroxy-2-propanone		146	196	129		
3-Heptanone	1.4080	148	103			
2-Heptanone	1.4080	151	123	89	207	
Cyclohexanone	1.4500	156	167	162	82	91
3,5-Dimethyl-4-heptanone		162	84			
2-Methylcyclohexanone	1.4480	165	191	137	oil	43
2,6-Dimethyl-4-heptanone	1.4130	168	126	66		
4-Octanone	1.4150	170	96	41		
4-Methylcyclohexanone	1.4460	171	199		109	39
2-Octanone	1.4150	173	123	58		
2,2,6-Trimethylcyclohexanone	1.4470	179	209	141		
Ethyl acetoacetate	1.4190	181	133	93		
Cycloheptanone	1.4610	182	163	148		23
5-Nonanone	1.4190	186	90			
3-Nonanone	1.4200	187	112			
2,5-Hexanedione	1.4260	194	224 <i>di</i>	257 <i>di</i>	120 <i>di</i>	137 <i>di</i>
2-Nonanone	1.4300	195	119	56		
Acetophenone (m.p. = 20°C)	1.5325	202	199	240	105	60
Menthone	1.4500	209	189	146	53	59
2-Methylacetophenone	1.5318	214	205	159		61
3,5,5-Trimethyl-2-cyclohexen-1-one	1.4760	214	191	130	68	76
1-Phenyl-2-propanone (m.p. = 27°C)		216	200	156	87	70
Propiophenone (m.p. = 20°C)	1.5258	220	174	191		54
3-Methylacetophenone	1.5290	220	198	207		55
Isobutyrophenone	1.5172	222	181	163	73	94
Pulegone	1.4870	224	175	142		119
1-Phenyl-2-butanone	1.5122	226	135			

## Ketones—Liquid (Continued)

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	B.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
6-Undecanone	1.4270	228	oil			oil
3-Chloroacetophenone	1.5506	228	232			88
2-Undecanone (m.p. = 12°C)	1.4300	228	122	63	45	
2,4-Dimethylacetophenone	1.5346	228	187			63
2-Chloroacetophenone	1.5438	229	160			113
n-Butyrophenone (m.p. = 12°C)	1.5195	230	188	190		50
d-Carvone	1.4990	230	163	191		73
4-Chloroacetophenone	1.5549	232	204	231	114	95
3,5-Dimethylacetophenone		237				114
2-Methoxyacetophenone	1.5365	239	183			83
3-Methoxyacetophenone	1.5410	240	196			
n-Valerophenone	1.5143	248	160	166	162	52
2,5-Dichloroacetophenone (m.p. = 14°C)	1.5624	251				130

**Ketones—Solid**

Melting points of derivatives (EC)

Name of compound	M.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
Acetophenone (b.p. = 202°C)	20	199	240	105	60
Propiophenone (b.p. = 220°C)	20	174	191		54
1-Phenyl-2-propanone (b.p. = 216°C)	27	200	156	87	70
4-Methylacetophenone (b.p. = 226°C)	28	205	260	97	88
2-Hydroxyacetophenone (b.p. = 215°C)	28	210	212	110	118
Phorone (b.p. = 198°C)	28	221	118		48
2,4-Dichloroacetophenone	34	208			148
4-Chloropropiophenone	36	176	223		63
4-Methoxyacetophenone (b.p. = 258°C)	38	198	220	142	87
2-Hydroxybnzophenone	39			155	143
2-Methoxybenzophenone	39		251		148
3-Bromopropiophenone	40	183			
4-Phenyl-3-buten-2-one	41	187	227	157	115
1-Indanone	42	233	258	131	146
8-Pentadecanone (b.p. = 178°C)	43				120
4-Bromopropiophenone	46	171			91
Benzophenone (b.p. = 306°C)	48	165	239	138	143
4-Bromoacetophenone (b.p. = 225°C)	51	208	230	126	128
3,4-Dimethoxyacetophenone	51	218	207	131	140
Methyl 2-naphthyl ketone	54	235	262	177	149
4-Methylbenzophenone	57	121	200	109	154
Benzalacetophenone (chalcone)	58	170	245	120	140 (68)
"-Chloroacetophenone	59	156	214	212	89
Desoxybenzoin	60	148	204	116	98

## Ketones—Solid (Continued)

Melting points of derivatives (EC)

Name of compound	M.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone	Oxime
Benzoylacetone	61		151	150	
1,1-Diphenylacetone	61	170		131	165
4-Methoxybenzophenone	62		180	132	116 (140)
Cinnamalacetone	68	186	223	180	153
2,6-Dimethyl-1,4-benzoquinone	73				175
4-Chlorobenzophenone	78		185	106	105
1,4-Cyclohexanedione	79	220 <i>mono</i> 231 <i>di</i>	240		188
3-Nitroacetophenone	80	257	228	128	132
4-Nitroacetophenone	81		258	132	174
4-Bromobenzophenone	82	350	230	126	116 (110)
9-Fluorenone	83		284	152	196
4,4-Dimethylbenzophenone	95	143	219	100	163
Benzil	95	243 <i>di</i>	189 <i>di</i>	235 <i>di</i>	237 <i>di</i>
3-Hydroxyacetophenone	96	195	257		
1,3-Cyclohexanedione	104				156
4-Hydroxyacetophenone	109	199	261	151	145
3,4-Dihydroxyacetophenone	116				184d
1,4-Benzoquinone	116	243	231 <i>di</i>	152	240
1,4-Naphthoquinone	125	247	278	206d	198
4-Hydroxybenzophenone	135	194	242	144	81 (152)
Benzoin	137	206d	245	159 (106)	152 (99)
2,4-Dihydroxyacetophenone	147	218	208	157	200d
4,4-Dichlorobenzophenone	148		241		135
Anthrone	154				
Xanthone	174			152	161
4,4-Bis(dimethylamino)benzophenone	177		274	175	233
Camphor (b.p. = 209°C)	178	248d	177	233	119
Isatin	203				200 (255)
4,4'-Dihydroxybenzophenone	210		192		

## Ketones—Solid (Continued)

Name of compound	Melting points of derivatives (EC)			
	M.p. (°C)	Semi- carbazone	2,4-Dinitro- phenyl- hydrazone	Phenyl- hydrazone Oxime
Ninhydrin	243			208
Acenaphthenequinone	261	271 <i>di</i>		219 <i>di</i>
9,10-Anthraquinone	285			183
Chloranil	290			220

## Carboxylic Acid Esters—Liquid

Name of compound	B.p. (EC)	$n_D^{20}$
Methyl formate	31	1.3433
Ethyl formate	54	1.3597
Methyl acetate	57	1.3593
Isopropyl formate	71	1.3678
Vinyl acetate	73	1.3954
Ethyl acetate	77	1.3723
Methyl propionate	80	1.3779
Methyl acrylate	80	1.3984
Propyl formate	81	1.3779
Isopropyl acetate	90	1.3773
Methyl carbonate	91	1.3687
Methyl isobutyrate	93	1.3840
Isopropenyl acetate	94	1.4033
<i>tert</i> -Butyl acetate	98	1.3853
Methyl methacrylate	100	1.4142
Ethyl propionate	100	1.3853
Ethyl acrylate	101	1.4059
Propyl acetate	102	1.3847
Methyl butyrate	102	1.3879
Allyl acetate	104	1.4049
Isopropyl propionate	110	1.3872
Ethyl isobutyrate	112	1.3870
<i>sec</i> -Butyl acetate	112	1.3888
Methyl isovalerate	117	1.3927
Isobutyl acetate	117	1.3901
Ethyl pivalate (ethyl trimethylacetate)	118	1.3906
Methyl crotonate	119	1.4242
Ethyl butyrate	122	1.4000
Propyl propionate	123	1.3933
Butyl acetate	126	1.3940
Diethyl carbonate	127	1.3852
Methyl valerate	127	1.3975
Methyl methoxyacetate	130	1.3964
Methyl chloroacetate	131	1.4221
Ethyl isovalerate	135	1.4009
Methyl pyruvate	137	1.4065
Methyl $\alpha$ -hydroxyisobutyrate	137	1.4112
Ethyl crotonate	138	1.4252
3-Methylbutyl acetate (isoamyl acetate)	142	1.4003
Methyl lactate	145	1.4144
Ethyl chloroacetate	145	1.4227
Ethyl valerate	146	1.4009
Ethyl $\alpha$ -chloropropionate	146	1.4170
Diisopropyl carbonate	147	1.3932
Pentyl acetate (Amyl acetate)	144-149	1.4019
Methyl hexanoate	151	1.4049
Cyclopentyl acetate	153	1.432
Ethyl lactate	154	1.4130
Ethyl pyruvate	155	1.4056

## Carboxylic Acid Esters—Liquid (Continued)

Name of compound	B.p.	
	(°C)	$n_D^{20}$
Ethyl dichloroacetate	158	1.4386
Ethyl $\alpha$ -bromopropionate	162	1.4490
Butyl butyrate	167	1.4075
Ethyl hexanoate	168	1.4073
Ethyl trichloroacetate	168	1.450
Methyl acetoacetate	170	1.4196
Methyl acetate	172	1.4092
Methyl heptanoate	172	1.4152
Cyclohexyl acetate	175	1.4401
Furfuryl acetate	176	1.4627
Ethyl $\beta$ -bromopropionate	179	1.4254
Ethyl acetoacetate	181	1.4198
Methyl furoate	181	1.4860
Dimethyl malonate	182	1.4140
Diethyl oxalate	185	1.4104
Ethyl $\alpha$ -chlorobutyrate	186	1.4306
Ethyl heptanoate	187	1.4100
Ethylene glycol diacetate	190	1.4150
Heptyl acetate	192	1.4130
Methyl octanoate	193	1.4170
Dimethyl succinate (m.p. = 18°C)	196	1.4197
Ethyl cyclohexanecarboxylate	196	1.4501
Dimethyl methylsuccinate	196	1.4200
Phenyl acetate	197	1.5033
Diethyl malonate	199	1.4139
Methyl benzoate	199	1.5168
(Butyrolactone	204	1.4365
Dimethyl maleate	204	1.4416
Ethyl levulinate	206	1.4229
(Valerolactone	207	1.4330
Ethyl octanoate	208	1.4178
Octyl acetate	210	1.4190
Ethyl benzoate	212	1.5057
Dimethyl glutarate	215	1.4242
Methyl nonanoate	215	1.4214
Benzyl acetate	206, 216	1.5006, 1.5232
Diethyl succinate	217	1.4198
Diethyl fumarate	218	1.4410
Methyl phenylacetate	220	1.5075
Diethyl maleate	223	1.4416
Methyl salicylate	224	1.5369
Methyl decanoate	225	1.4256
Ethyl phenylacetate	228	1.4980
Propyl benzoate	231	1.5014
Diethyl glutarate	234	1.4240
Ethyl salicylate	234	1.5296
Methyl $\beta$ -phenylpropionate	238	1.503
Propylene carbonate	240	1.4210
Diethyl adipate	245	1.4277



## Carboxylic Acid Esters—Liquid (Continued)

Name of compound	B.p. (EC)	$n_D^{20}$
Methyl undecylenate	248	1.4393
Diethyl pimelate	255	1.4298
Methyl anthranilate	256	1.5830 <sup>a</sup>
Ethyl benzoylacetate	265	1.5498
Dimethyl suberate	268	1.4333
Ethyl cinnamate	271	1.5598
Methyl 2-nitrobenzoate	275	1.5350
Diethyl tartrate (m.p. = 18EC)	280	1.4468
Diethyl suberate	282	1.4324
Dimethyl phthalate	284	1.6138
Diethyl phthalate	290	1.5019
Ethyl 3-aminobenzoate	294	1.5608
Diethyl benzylmalonate	300	1.4868
Benzyl benzoate	323	1.5680
Methyl myristate (m.p. = 18°C)	323 (295)	1.4362
Diisobutyl phthalate	327	1.4888
Dibutyl phthalate	340	1.4900

<sup>a</sup>The benzamide derivative melts at 99-100 EC.

## Carboxylic Acid Esters—Solid

Name of compound	M.p. (°C)	B.p. (°C)
Dimethyl succinate	18	196
Methyl myrishte	18	323
Diethyl tartarate	18	280
Benzyl benzoate	21	324
Methyl anthranilate (methyl 2-aminobenzoate)	24	256
Dimethyl sebacate	27	
Bornyl acetate	29	221
Methyl palmitate	30	
Ethyl 2-nitrobenzoate	30	275
Methyl 4-toluate	33	222
Ethyl stearate	33	
Ethyl 2-furoate	36	196
Methyl cinnamate	36	261
Ethylene carbonate	37	245
Ethyl mandelate	37	254
Dimethyl itaconate	39	
Methyl stearate	39	
Phenyl salicylate	42	
Diethyl terephthalate	44	302
Ethyl 3-nitrobenzoate	47	296
Dimethyl tartrate	49	280
1-Naphthyl acetate	49	
Methyl mandelate	53	250d
Dimethyl oxalate	54	
Ethyl 4-nitrobenzoate	56	186
Coumarin	67	290
Dimethyl isophthalate	68	
Phenyl benzoate	69	314
Methyl 3-hydroxybenzoate	70	
Diphenyl phthalate	74	
Diphenyl carbonate	78	306
Methyl 3-nitrobenzoate	78	279
Methyl 4-bromobenzoate	83	
Ethyl 4-aminobenzoate	90	
Dimethyl <i>d,l</i> -tartarate	90	282
3-Carboethoxycoumarin	93	
Methyl 4-nitrobenzoate	96	
Propyl 4-hydroxybenzoate	96	
Dimethyl fumarate	102	193
Cholesteryl acetate	114	
Ethyl 4-hydroxybenzoate	116	
Hydroquinone diacetate	124	
Methyl 4-hydroxybenzoate	131	
Ethyl 4-nitrocinnamate	137	
Dimethyl terephthalate	141	
Propyl gallate	150	

## Amines—Liquid

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	b.p. (°C)	Benzamide	Benzene- sulfon- amide	Phenyl- thiourea
Isopropylamine	1.3746	33		26	101
Ethylmethylamine	1.3740	36			
<i>tert</i> -Butylamine	1.3780	46	134		120
<i>n</i> -Propylamine	1.3885	48	84	36	63
Diethylamine	1.3850	56	42	42	34
<i>sec</i> -Butylamine	1.3928	63	76	70	101
Isobutylamine	1.3970	69	57	53	82
<i>n</i> -Butylamine	1.4010	77	42		65
Diisopropylamine	1.3920	84		94	
Pyrrolidine	1.4431	89			
Triethylamine	1.4000	89			
2-Aminopentane	1.4055	92			
Isopentylamine	1.4089	96			102
<i>n</i> -Pentylamine		104			69
Piperidine	1.4525	106	48	93	101
Di- <i>n</i> -propylamine	1.4035	110		51	69
Ethylenediamine	1.4565	116	244 <i>di</i>	168 <i>di</i>	102
Pyridine	1.5100	116			
2-Methylpyridine (2-picoline)	1.5000	129			
Morpholine	1.4540	130	75	118	136
<i>n</i> -Hexylamine	1.4180	132	40	96	77
Cyclohexylamine	1.4585	134	149	89	148
2-Dimethylaminoethyl alcohol	1.4294	135			
1,3-Diaminopropane	1.4570	136	148 <i>di</i>	96	
Diisobutylamine	1.4081	139		55	113
2,6-Dimethylpyridine	1.4970	143			
3-Methylpyridine (3-picoline)	1.5050	143			
4-Methylpyridine (4-picoline)	1.5050	146			
<i>n</i> -Heptylamine	1.4243	156			75
Tri- <i>n</i> -propylamine	1.4165	157			
Di- <i>n</i> -butylamine	1.4170	159			86

## Amines—Liquid (Continued)

Melting points of derivatives (EC)

Name of compound	$n_D^{20}$	b.p. (°C)	Benzamide	Benzene- sulfon- amide	Phenyl- thiourea
1,4-Diaminobutane (m.p. = 27°C)	1.4569	159	177 <i>di</i>		168
2-Aminoethanol	1.4540	171			138
2,4,6-Trimethylpyridine	1.4980	172			
1,5-Diaminopentane	1.4582	178	135 <i>di</i>	119	148
<i>n</i> -Octylamine (m.p. = 0°C)	1.4290	180			
Benzyl dimethylamine	1.5010	181			
Benzyl methylamine	1.5230	181			
Aniline	1.5860	184	160	112	154
Benzylamine	1.5430	185	105	88	156
1-Amino-1-phenylethane	1.5330	187	120		
<i>N,N</i> -Dimethylaniline	1.5580	193			
<i>N</i> -Methylaniline	1.5700	196	63	79	87
2-Amino-1-phenylethane	1.5330	198	116	69	135
2-Methylaniline ( <i>o</i> -toluidine)	1.5720	200	146	124	136
<i>n</i> -Nonylamine	1.4330	201	49		
3-Methylaniline ( <i>m</i> -toluidine)	1.5670	203	125	95	94
<i>N</i> -Ethylaniline	1.5540	205	60	oil	89
2-Chloroaniline	1.5580	208	99	129	156
4-Methylbenzylamine	1.5340	208	137		
Tri- <i>n</i> -butylamine	1.4280	211			
2,6-Dimethylaniline	1.5600	215	168		204
2,5-Dimethylaniline	1.5590	215	140	138	148
2,4-Dimethylaniline	1.5590	216	192	130	152
<i>N,N</i> -Diethylaniline	1.5420	218			
3,5-Dimethylaniline	1.5570	220	144		153
2,3-Dimethylaniline	1.5680	221	189		
2-Methoxyaniline ( <i>o</i> -anisidine)	1.5740	225	60 (84)	89	136
4-Isopropylaniline	1.5430	225	162		

## Amines—Liquid (Continued)

Name of compound	$n_D^{20}$	b.p. (°C)	Melting points of derivatives (EC)		
			Benzamide	Benzene-sulfonamide	Phenylthiourea
2,4,6-Trimethylaniline	1.5520	229	204	137	193
3-Chloroaniline	1.5940	230	119	121	124
Quinoline	1.6268	237			
2-Chloro-6-methoxyaniline	1.5760	246	135		
4-Ethoxyaniline (p-phenetidine)	1.5600	248	173	143	136
3-Bromoaniline (m.p. = 18°C)	1.6250	251	120 (136)		143
3-Methoxyaniline (m-anisidine)	1.5810	251			
Dicyclohexylamine (m.p. = 20°C)	1.4842	255	153		
Methyl Anthranilate	1.5830	256	99		
Tri- <i>n</i> -pentylamine	1.4360	257			
Dibenzylamine	1.5750	300	112	68	

**Amines—Solid**

Melting points of derivatives (°C)

Name of compound	M.p. (°C)	Benzamide	Benzene- sulfon- amide	Phenyl- thiourea
2-Bromoaniline	32	116		146 (161)
3-Iodoaniline	33	157		
N-Benzylaniline	37	107	119	103
2,6-Dichloroaniline	39		157	
1,6-Diaminohexane	42	155 <i>di</i>	154 <i>di</i>	
4-Methylaniline ( <i>p</i> -toluidine)	44	158	120	141
2-Aminobenzoic acid	147	180		
3-Aminobenzoic acid	174	113		
2,4-Dinitroaniline	180	202 (220)		
4-Hydroxyaniline (4-aminophenol)	184	216	125	150
4-Aminobenzoic acid	188	278	212	
2,4,6-Trinitroaniline	190	196	211	

## Carboxylic Acids—Liquid

Name of compound	Melting points of derivatives (°C)				
	B.p. (°C)	$n_D^{20}$	Anilide	p-Toluidide	Amide
Formic acid	101	1.3714	50	53	
Acetic acid	118	1.3721	114	147	82
Propenoic acid (acrylic acid)	140	1.4224	105	141	85
Propionic acid	141	1.3861	106	126	81
Isobutyric acid	155	1.3920	105	107	129
2-Methylpropenoic acid	163	1.4314			109
Butanoic acid	164	1.3983	96	75	115
3-Butenoic acid	164	1.4249	58		73
<i>cis</i> -2-Butenoic acid	169	1.4456	102	132	102
3-Methylbutanoic acid	177	1.4043	110	107	137
3,3-Dimethylbutanoic acid	184	1.4096	132	134	132
2-Chloropropanoic acid	186	1.4345	92	124	80
Pentanoic acid (valeric acid)	186	1.4086	63	74	106
Dichloroacetic acid	194	1.4659	118	153	98
4-Methylpentanoic acid	199	1.4144	112	63	121
2-Bromopropanoic acid	205d	1.4750	99	125	123
Hexanoic acid (caproic acid)	205	1.4163	95	75	100
2-Bromobutanoic acid	217d	1.4720	98	92	112
Heptanoic acid	223	1.4224	70	81	96
2-Ethylhexanoic acid	228	1.4241			102
Octanoic acid (m.p. = 16°C)	239	1.4278	57	70	110
Nonanoic acid (m.p. = 12°C)	255	1.4319	57	84	99
2-Phenylpropanoic acid	265	1.5225			92
Decanoic acid (m.p. = 32°C)	270		70	78	108
Undecanoic acid (m.p. = 30°C)	284		71	80	103
Oleic acid (m.p. = 16°C)	d	1.4582	41	42	76

## Carboxylic Acids—Solid

Name of compound	Melting points of derivatives (EC)				
	M.p. (°C)	B.p. (°C)	Anilide	p-Toluidide	Amide
10-undecenenoic acid	25	275	67	68	87
2-Bromopropanoic acid	26	205d	99	125	123
Undecanoic acid	29	284	71	89	103
Cyclohexanecarboxylic acid	31	233	146		186
Decanoic acid	32	270	70	78	108
2-Oxobutanoic acid	32				117
Levulinic acid (4-oxopentanoic acid)	34	245	102	108	108d
Pivalic acid (trimethylacetic acid)	36	164	130	120	157
Acetoacetic acid (3-oxobutanoic acid)	37	d	86	95	54
3-Chloropropanoic acid	42	204			101
2-Phenylbutanoic acid	42	270			85
Dodecanoic acid (lauric acid)	44	299	78	87	100
Tridecanoic acid	44	312	80	88	100
Hydrocinnamic acid	48	280	98	135	105
Bromoacetic acid	50	208	131	91	91
4-Phenylbutanoic acid	52	290			84
Pentadecanoic acid	52		78		103
Tetradecanoic acid (myristic acid)	54		84	93	107
Trichloroacetic acid	58	198	97	113	141
5-Phenylpentanoic acid	60		90		109
Heptadecanoic acid	61				108
3-Bromopropanoic acid	61				111
Hexadecanoic acid (palmitic acid)	62		91	98	106
Chloroacetic acid	63	189	137	162	118
<i>cis</i> -2-Methyl-2-butenoic acid	65	199	77	71	76
Cyanoacetic acid	66		198		120
Benzoylformic acid	66				91
Octadecanoic acid (stearic acid)	70		96	102	109



## Carboxylic Acids—Solid (Continued)

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives (EC)		
			Anilide	p-Toluidide	Amide
trans-2-Butenoic acid	72	189	118	132	160
<i>m</i> -Methoxyphenylacetic acid	73				125
Phenylacetic acid	76		117	136	156
Glycolic acid (hydroxyacetic acid)	79		97	143	120
<i>cis</i> -Methylcinnamic acid	81				128
Iodoacetic acid	83		144		95
<i>p</i> -Methoxyphenylacetic acid	87				189
<i>o</i> -Methylphenylacetic acid	90				161
2-Benzoylbenzoic acid hydrate	90		195		165
Citraconic acid (methylmaleic acid)	92d		170 <i>mono</i>	175 <i>di</i>	187 <i>di</i>
Z-3-Chloro-2-butenic acid	94		124		101
<i>o</i> -Chlorophenylacetic acid	95		139	170	175
<i>p</i> -Methylphenylacetic acid	95				185
3,4-Dimethoxyphenylacetic acid	95				147
Glutaric acid (pentanedioic acid)	98		224	218	176 <i>di</i>
3-Phenoxypropionic acid	98				119
Phenoxyacetic acid	99		99		102
Citric acid hydrate	100		192 <i>tri</i>	189 <i>tri</i>	210d <i>tri</i>
2-Methoxybenzoic acid	101	200	131		129
2-hydroxybutanedioic acid	101		197 <i>di</i>	207 <i>di</i>	157 <i>di</i>
Oxalic acid dihydrate	101		149 <i>mono</i>	169 <i>mono</i>	219 <i>mono</i>
			254 <i>di</i>	268 <i>di</i>	419d <i>di</i>
<i>o</i> -Toluic acid (2-methylbenzoic acid)	104		125	144	143
Heptanedioic acid (pimelic acid)	105		109 <i>mono</i>	206 <i>di</i>	175 <i>di</i>
Nonanedioic acid (azelaic acid)	107		108 <i>mono</i>	201 <i>di</i>	95 <i>mono</i>
				186 <i>di</i>	172 <i>di</i>
3-Methoxybenzoic acid ( <i>m</i> -anisic acid)	110				136

## Carboxylic Acids—Solid (Continued)

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives (EC)		
			Anilide	p-Toluidide	Amide
Ethylmalonic acid	111			150	214 <i>di</i>
<i>m</i> -Toluic acid	112		126	118	95
2-Phenylbenzoic acid	113				177
2-Phenoxybenzoic acid	113				131
<i>p</i> -Bromophenylacetic acid	114				194
2-Acetylbenzoic acid	115				116
Methylsuccinic acid	115		159 <i>mono</i> 200 <i>di</i>	164	225 <i>di</i>
$\delta$ -Benzoylpropionic acid	116			150	146
2,6-Dimethylbenzoic acid	116				139
4-Isopropylbenzoic acid	117				133
Benzylmalonic acid	117d			217 <i>di</i>	225 <i>di</i>
Tropic acid (2-phenyl-3-hydroxy- propanoic acid)	117				169
<i>d,l</i> -Mandelic acid	118		152	172	132
<i>m</i> -Nitrophenylacetic acid	120				110
3-Furoic acid	121				169
Benzoic acid	122		160	158	130
Picric acid	123				
2,4-Dimethylbenzoic acid	127			141	180
2-Benzoylbenzoic acid	127			195	165
Dodecanedioic acid	128		191 <i>di</i>	165 <i>di</i>	185 <i>di</i>
Maleic acid ( <i>cis</i> -butenedioic acid)	130		187 <i>di</i>	142 <i>di</i>	173 <i>mono</i> 260 <i>di</i>
1-Naphthylacetic acid	132		155 (160)		180
2,5-Dimethylbenzoic acid	132			140	186
2-Furoic acid	133		124	108	143
<i>trans</i> -Cinnamic acid	133		153	168	148
Decanedioic acid (sebacic acid)	134		202 <i>di</i>	201 <i>di</i>	210 <i>di</i>
Malonic acid (propanedioic acid)	135		230 <i>di</i>	253 <i>di</i>	170 <i>di</i>

## Carboxylic Acids—Solid (Continued)

Name of compound	Melting points of derivatives (°C)				
	M.p. (°C)	B.p. (°C)	Anilide	p-Toluidide	Amide
O-Acetylsalicylic acid (aspirin)	135			136	138
1,3-Acetonedicarboxylic acid	135d		155 <i>di</i>		
Pyridine-2-carboxylic acid	137		76	104	107
Phenylpropynoic acid	137		126	142	100
Methylmalonic acid	138d		182	228 <i>di</i>	217
5-Chloro-2-nitrobenzoic acid	139		164		154
2-Chlorobenzoic acid	139		118	131	142
3-Nitrobenzoic acid	140		154	162	143
meso-Tartaric acid	140		194 <i>mono</i>		187 <i>di</i>
2-Chloro-4-nitrobenzoic acid	141		168		172
o-Nitrophenylacetic acid	141				161
2,4-Dichlorophenoxyacetic acid	141				130
4-Chloro-2-nitrobenzoic acid	142				172
2-Naphthylacetic acid	142				200
Octanedioic acid (suberic acid)	144		186 <i>di</i>	218 <i>di</i>	217 <i>di</i>
2,4,5-Trimethoxybenzoic acid	144		155		185
2,6-Dichlorobenzoic acid	144				202
o-Chlorophenoxyacetic acid	146		121		150
2-Nitrobenzoic acid	146		155		176
2-Aminobenzoic acid (anthranilic acid)	147		131	151	109
Diphenylacetic acid	148		180	173	168
p-Hydroxyphenylacetic acid	148				175
2-Bromobenzoic acid	150		141		155
Benzilic acid	150		175	190	154
Citric acid (anhydrous)	153		192 <i>tri</i>	189 <i>tri</i>	210d <i>tri</i>
p-Nitrophenylacetic acid	153		198	210	198
2,5-Dichlorobenzoic acid	153				155
Hexanedioic acid (adipic acid)	154		241 <i>di</i>	239	220 <i>di</i>
3-Bromobenzoic acid	155		136		155

## Carboxylic Acids—Solid (Continued)

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives (EC)		
			Anilide	p-Toluidide	Amide
2,4,6-Trimethylbenzoic acid	155				188
p-Chlorophenoxyacetic acid	156		125		133
Tartronic acid (hydroxymalonic acid)	157d				198 <i>di</i>
3-Chlorobenzoic acid	158		123		134
Salicylic acid (2-hydroxybenzoic acid)	158		136	156	142
1-Naphthoic acid	162		163		205
2-Iodobenzoic acid	162		141		110
4-Nitrophthalic acid	164		192	172 <i>mono</i>	200d
2,4-Dichlorobenzoic acid	164				194
m-Chlorocinnamic acid	164		135	142	76
3,4-Dinitrobenzoic acid	165		189		166
Itaconic acid (propene-2,3-dicarboxylic acid)	166		152 <i>mono</i> (190)		192 <i>di</i>
5-Bromosalicylic acid	165		222		232
2-Chloro-5-nitrobenzoic acid	165				178
1,2,3-propanetricarboxylic acid	166		252 <i>tri</i>		207d <i>tri</i>
3,4-Dimethylbenzoic acid	166		104		130
3-Methylsalicylic acid	166		83		112
3,5-Dimethylbenzoic acid	166				133
Phenylsuccinic acid	167		175 "	175 "	159 "
			171 \$	169 \$	145 \$
			222 <i>di</i>	211 <i>di</i>	
d-Tartaric acid	170		180d <i>mono</i> 264d <i>di</i>		172 <i>mono</i> 196d <i>di</i>
3,4,5-Trimethoxybenzoic acid	171				177
5-Chlorosalicylic acid	172				227
3-Aminobenzoic acid	174		140		111
3,5-Dinitrosalicylic acid hydrate	174				181
Acetylenedicarboxylic acid	179				249d <i>di</i>

## Carboxylic Acids—Solid (Continued)

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives (EC)		
			Anilide	p-Toluidide	Amide
<i>p</i> -Toluic acid (4-methylbenzoic acid)	179	275	145	160	160
3,4-Dimethoxybenzoic acid	181		154		164
4-Chloro-3-nitrobenzoic acid	182		131		156
2,4-Dinitrobenzoic acid	183				203
4-Methoxybenzoic acid	185		171	186	167
2-Naphthoic acid	185		171	192	192
3-Iodobenzoic acid	187				186
Coumarin-3-carboxylic acid	188		250		236
<i>p</i> -Nitrophenoxyacetic acid	188		170		158
<i>d</i> -Camphoric acid	188		204 <i>mono</i>	214 "	182 <i>mono</i>
			226 <i>di</i>	196 "	192 <i>di</i>
4-Aminobenzoic acid	188				183
Succinic acid (butanedioic acid)	189		149 <i>mono</i>	180 <i>mono</i>	157 <i>mono</i>
			230 <i>di</i>	255 <i>di</i>	260d <i>di</i>
Hippuric acid	190		208		183
Dimethylmalonic acid	193 subl				269 <i>di</i>
<i>trans</i> -Aconitic acid	194d		189 <i>di</i>		>250 <i>tri</i>
4-Ethoxybenzoic acid	198		170		202
<i>trans-m</i> -Nitrocinnamic acid	199				196
3,4-Dihydroxybenzoic acid	200d		166		212
Fumaric acid	200 (on slow heating)		314 <i>di</i>		266di
3-Hydroxybenzoic acid	200		157	163	170
2,5-Dihydroxybenzoic acid	204				218
<i>d,l</i> -Tartaric acid	204		236 <i>di</i>		226 <i>di</i>
2,3-Dihydroxybenzoic acid	204				175
3,5-Dinitrobenzoic acid	207		234	147	183
3,4-Dichlorobenzoic acid	209				168
Phthalic acid	210		253 <i>di</i>	201 <i>di</i>	220 <i>di</i>
<i>o</i> -Chlorocinnamic acid	212		176		168

## Carboxylic Acids—Solid (Continued)

Name of compound	M.p. (°C)	B.p. (°C)	Melting points of derivatives (EC)		
			Anilide	p-Toluidide	Amide
2,4-Dihydroxybenzoic acid	213		126	222	(216d)
trans- <i>o</i> -Hydroxycinnamic acid	214d				209d
4-Hydroxybenzoic acid	215		197	204	162
3-Nitrophthalic acid	218		234 <i>di</i>	226 <i>di</i>	201d <i>di</i>
4-Cyanobenzoic acid	219		179		223
4-Phenylbenzoic acid	226				223
Piperonylic acid	229				169
5-Nitrosalicylic acid	230		224		225
3-Chloro-2-nitrobenzoic acid	235		186		
4-Nitrobenzoic acid	241		211	204	201
4-Chlorobenzoic acid	243		194		179
trans- <i>o</i> -Nitrocinnamic acid	243				185
4-Dimethylaminobenzoic acid	245		183		206
4-Bromobenzoic acid	251		197		190
3,4,5-Trihydroxybenzoic acid	254d		207		189
4-Iodobenzoic acid	270		210		217
p-Nitrocinnamic acid	285				204
Fumaric acid	289	(sealed tube)	314 <i>di</i>		266 <i>di</i>
2-Bromobenzene-1,4-dicarboxylic acid	299				270 <i>di</i>
1,4-benzenedicarboxylic acid	300	subl	336 <i>di</i>		
1,3-benzenedicarboxylic acid	348	subl			280 <i>di</i>

## Carboxylic Acid Anhydrides

Name of compound	Corresponding Acid			
	B.p (EC)	M.p (EC)	b.p. (EC)	m.p. (EC)
Acetic anhydride	140		118	
Propionic anhydride	167		141	
Isobutyric anhydride	182		155	
Butyric anhydride	198		164	
Dichloroacetic anhydride	216d		194	
<i>cis</i> -1,2-Cyclohexandicarboxylic anhydride		34		192
Benzoic anhydride		42		122
Chloroacetic anhydride		46	189	63
Maleic anhydride		54		130
Glutaric anhydride		56		98
4-Methylbenzoic anhydride		95		179
Succinic anhydride		120		189
Phthalic anhydride		132		210
<i>trans</i> -1,2-cyclohexanedicarboxylic anhydride		147		230
3-Nitrophthalic anhydride			162	218
4-Nitrobenzoic anhydride			189	241
<i>d,l</i> -Camphoric anhydride			225	187
Tetrachlorophthalic anhydride			256	250d
1,8-Naphthalic anhydride			274	270d
Tetrabromophthalic anhydride			280	266y

## Carboxylic Acid Chlorides

Name of compound	B.p. (EC)	M.p. (EC)	Corresponding carboxylic acid	
			b.p. (EC)	m.p. (EC)
Acetyl chloride	52		118	
Oxalyl chloride	64			101
Methyl chloroformate	72			
Propionyl chloride	80		141	
Isobutyryl chloride	92		155	
Ethyl chloroformate	93			
Methacrylyl chloride	95		163	
Butyryl chloride	102		164	
Chloroacetyl chloride	108		189	63
Methoxyacetyl chloride	113		204	
Isovaleryl chloride	115		177	
Trichloroacetyl chloride	118		197	58
<i>trans</i> -Crotonyl chloride	126		189	72
Pentanoyl chloride	126		186	
Isobutyl chloroformate	129			
Hexanoyl chloride	153		205	
Fumaryl chloride	162			289 (200)
Cyclohexanecarboxylic acid chloride	184			31
Succinyl chloride	190d	20		189
Octanoyl chloride	196		239	16
Benzoyl chloride	197			122
Phenylacetyl chloride	210			76
Nonanoyl chloride	215		255	12
Glutaryl chloride	218			98
4-Chlorobenzoyl chloride	222			243
3-Chlorobenzoyl chloride	225			158
Phenoxyacetyl chloride	226			99
4-Methylbenzoyl chloride	226			179
2-Chlorobenzoyl chloride	238			142
Phthaloyl chloride	280	15		210
Adipoyl chloride	d			154
Sebacoyl chloride	d			134



## Carboxylic Acid Chlorides (Continued)

Name of compound	B.p. (EC)	M.p. (EC)	Corresponding carboxylic acid	
			b.p. (EC)	m.p. (EC)
<i>trans</i> -Cinnamoyl chloride	258	35		133
4-Bromobenzoyl chloride	247	42		251
Isophthaloyl chloride	276	44		348
2,4-Dinitrobenzoyl chloride		46		183
3,6-Dinitrobenzoyl chloride		69		207
4-Nitrobenzoyl chloride		75		241
Terephthaloyl chloride		84		300y

## Carboxylic Acid Amides—Liquid

Name of compound	B.p. (°C)	$n_D^{20}$
N,N-Dimethylformamide	153	1.4305
N,N-Dimethylacetamide	165	1.4380
N,N-Diethylformamide	178	1.4321
N-Methylformamide	185	1.4319
N,N-Diethylacetamide	186	1.4374
Formamide	193 (195d)	1.4472
N-Ethylformamide	199	1.4320
N-Methyl-2-pyrrolidinone	202	1.4684
N-Ethylacetamide	205	
N-Methylformanilide (m.p. = 13°C)	244	1.5593
2-Pyrrolidinone ( $\gamma$ -butyrolactam) (m.p. = 24°C)	250	1.4860

## Carboxylic Acid Amides-Solid

Name of compound	M.p. (EC)
N-Methylacetamide	31
*-Valerolactam (2-piperidone)	39
Ethyl urethane	49
Formanilide	50
Methyl urethane	52
Phenyl urethane	53
N-Ethylacetanilide	54
Butyl urethane	54
Acetoacetamide	54
Propyl urethane	60
N-Benzylformamide	60
Pentananilide	63
Heptananilide	70
Decananilide	70
$\epsilon$ -Caprolactam	71
3-Butenamide	73
N,N-Diphenylformamide	73
Oleamide	76
N-Acetylacetamide	79
"-Chloropropionamide	80
Propionamide	81
N-Methylbenzamide	82
Acetamide	82
Acrylamide	85
Acetoacetanilide	86
3-Bromoacetanilide	87
2-Chloroacetanilide	88
N-Phenylmaleimide	91
Bromoactamide	91
2-Nitroacetanilide	92
Maleimide	93
Hexananilide	95
Iodoacetamide	95
Heptanamide	96
Butyranilide	96
<i>m</i> -Toluamide	97
Dichloroacetamide	98
Nonanamide	99
Hexanamide	100
N-Methylacetamide	102
Undecanamide	103
Isobutyranilide	105
Octadecamide	104
Propionanilide	106
Hexadecanamide (palmitamide)	106
Pentanamide	106
Tetradecanamide (myristamide)	107
Decanamide	108
Heptadecanamide	108

## Carboxylic Acid Amides-Solid (Continued)

Name of compound	M.p. (°C)
Dodecanamide (lauramide)	110
Octanamide	110
Methacrylamide	111
Anthranilamide	114
Acetanilide	114
Butyramide	115
Chloroacetamide	118
Cyanoacetamide	120
<i>β</i> -Bromopropionamide	124
Succinimide	126
Isobutyramide	129
2-Methoxybenzamide	129
Benzamide	130
2-Ethoxybenzamide	130
Urea	133
3-Chlorobenzamide	134
Phenacetin	134
3-Methylbutanamide	136
Salicylanilide	136
2-Chlorobenzamide	142
Salicylamide	142
<i>o</i> -Toluamide	143
3-Nitrobenzamide	143
Cinnamamide	148
Trimethylacetamide (pivalamide)	155
2,5-Dichlorobenzamide	155
3-Bromobenzamide	155
Phenylacetamide	156
Succinic acid monoamide	157
<i>N</i> -(1-Naphthyl)acetamide	159
<i>p</i> -Toluamide	159
2-Bromobenzamide	161
4-Hydroxybenzamide	162
Benzanilide	163
3,4-Dimethoxybenzamide	164
4-Bromoacetanilide	167
4-Methoxybenzamide	167
4-Hydroxyacetanilide	169
3-Hydroxybenzamide	170
Malonamide (diamide)	170
<i>N</i> -Bromosuccinimide	173
2-Nitrobenzamide	176
4-Chloroacetanilide	179
4-Aminobenzamide	183
3,5-Dinitrobenzamide	183
2-Iodobenzamide	184
3-Iodobenzamide	186
4-Bromobenzamide	189
Biuret	192d
4-Nitrobenzamide	200
Isatin	201d
1-Naphthamide	202
2,6-Dichlorobenzamide	202
2,4-Dinitrobenzamide	203
4-Nitroacetanilide	215
4-Iodobenzamide	217
Hydantoin	218
Phthalamide (diamide)	220
2,4-Dihydroxybenzamide	222
Phthalimide	238
<i>sym</i> -Diphenylurea	240
Succinamide (diamide)	260d

## Nitriles

Name of compound	B.p. (°C)	M.p. (°C)	n <sub>D</sub> <sup>20</sup>
Acrylonitrile	77		1.3911
Acetonitrile	81		1.3442
Propanenitrile	97		1.3659
2-Methylpropanenitrile	108		1.3720
Butanenitrile	117		1.3812
4-Methylbutanenitrile	130		1.3927
Pentanenitrile	141		1.3991
4-Methylpentanenitrile	155		1.4059
Hexanenitrile	165		1.4115
3-Chloropropanenitrile	178		1.4379
5-Methylhexanenitrile	180		
Heptanenitrile	183		1.4104
Benzonitrile	190		1.5289
4-Chlorobutanenitrile	196		1.4413
2-Methylbenzonitrile (2-tolunitrile)	205		1.5279
Octanenitrile	206		1.4200
Ethyl cyanoacetate	207		1.4179
3-Methylbenzonitrile (3-tolunitrile)	212		1.5256
Nonanenitrile	224		1.4252
Phenylacetoneitrile (benzyl cyanide)	234		1.5211
Decanenitrile	245		1.4295
Dodecanenitrile	277		1.4358
Glutaronitrile (1,3-dicyanopropane)	286		1.4365
Cinnamonitrile	256	20	
4-Methylbenzonitrile (4-tolunitrile)	217	27	
Malononitrile	219	30	
4-Chlorobenzyl cyanide	267	30	
1-Cyanonaphthalene	299	34	
3-Bromobenzonitrile	225	38	
3-Chlorobenzonitrile		41	
2-Chlorobenzonitrile	232	43	
4-Cyanobutanoic acid			45
3-Cyanopropanoic acid			48
3-Cyanopyridine			50

## Nitriles (Continued)

Name of compound	B.p. (°C)	M.p. (°C)
2-Aminobenzonitrile	266	51
2-Bromobenzonitrile	253	53
2,4,6-Trimethylbenzonitrile		55
Succinonitrile	267	57
4-Methoxybenzonitrile	256	62
3,5-Dichlorobenzonitrile		65
Cyanoacetic acid		67
3,4-Dichlorobenzonitrile		72
Diphenylacetoneitrile		75
4-Cyanopyridine		78
3-Cyanobenzaldehyde		80
2-Chloro-6-methylbenzonitrile		82
4-Aminobenzonitrile		86
4-Chlorobenzonitrile	223	96
2-Cyanophenol		98
2,4-Dinitrobenzonitrile		104
2-Nitrobenzonitrile		110
4-Bromobenzonitrile	237	112
4-Cyanophenol		113
<i>p</i> -Nitrophenylacetoneitrile		116
3-Nitrobenzonitrile		118
2,5-Dichlorobenzonitrile		130
1,2-Dicyanobenzene		141
2,6-Dinitrobenzonitrile		145
4-Nitrobenzonitrile		147
1,3-Dicyanobenzene		162
2-Cyanobenzoic acid		187
Tetracyanoethylene		198
3-Cyanobenzoic acid		217
4-Cyanobenzoic acid		219

## Nitro Compounds

Name of compound	B.p. (°C)	M.p. (°C)	n <sub>D</sub> <sup>20</sup>	Nitration product	
				Nitro positions	m.p. (°C)
Nitromethane	101		1.3817		
Nitroethane	115		1.3917		
2-Nitropropane	120		1.3944		
1-Nitropropane	131		1.4016		
2-Nitrobutane	140		1.4013		
1-Nitrobutane	153		1.4103		
1-Nitropentane	173		1.4175		
Nitrobenzene	211		1.5562	1,3	90
2-Nitrotoluene	222		1.5474	2,4	71
1,3-Dimethyl-2-nitrobenzene	226	13		1,3,5	182
3-Nitrotoluene	233	16	1.5470	mixture	
1,4-Dimethyl-2-nitrobenzene	241		1.5414	1,2,4	139
1,3-Dimethyl-4-nitrobenzene	246	2	1.5497	1,3,5	182
1,2-Dimethyl-3-nitrobenzene	248	16	1.5434	1,2	82
2-Nitro- <i>p</i> -cymene	264		1.5280	2,6	54
2-Nitroanisole	273	10	1.5620	2,4,6	68
2-Methyl-2-nitropropane	127	26	1.4036		
1,2-Dimethyl-4-nitrobenzene		31		1,2	82
2-Chloronitrobenzene	246	32		2,4	52
2,4-Dichloronitrobenzene	258	33			
2-Chloro-6-nitrotoluene	238	37		4,6	49
3-Nitroanisole		38		3,5	106
4-Chloro-2-nitrotoluene		38		2,6	77
2-Bromonitrobenzene		43		1,3	72
2,4,6-Trimethylnitrobenzene		44		1,3	86
3-Chloronitrobenzene		45		mixture	
4-Nitrotoluene	234	52		2,4	70
1-Chloro-2,4-dinitrobenzene		52		2,4,6	183
4-Nitroanisole		53		2,4	89
3-Nitrobromobenzene		56		3,4	59
1-Nitronaphthalene		57			

## Nitro Compounds (Continued)

Nitration product

Name of compound	B.p. (°C)	M.p. (°C) $n_D^{20}$	Nitro positions	m.p. (°C)
3,4-Dinitrotoluene		61		
2,6-Dinitrotoluene		66	2,4,6	82
2,4-Dinitrotoluene		70	2,4,6	82
3,5-Dimethylnitrobenzene		75		
4-Chloronitrobenzene	242	84	2,4	52
1,3-Dinitrobenzene		90		
1-Chloro-8-nitronaphthalene		94		
2,4-Dinitroanisole		95	2,4,6	68
4-Nitrobiphenyl		114	4,4'	240
1,2-Dinitrobenzene		118		
4-Nitrobromobenzene		126		
9-Nitroanthracene		146		
1,8-Dinitronaphthalene		170		
1,4-Dinitrobenzene		173		
1,5-Dinitronaphthalene		217		
4,4-Dinitrobiphenyl		240		



## Phenols

## Melting points of derivatives

Name of compound	M.p. (EC)	B.p. (EC)	3,5- Dinitro- benzoate	4-Nitro- benzoate	"-Naphthyl- urethane	Bromo derivative
2-Chlorophenol	7	176	143	115	120	76 <i>di</i>
Phenol	42	182	146	127	132	95 <i>tri</i>
2-Methylphenol (o-cresol)	31	191	138	94	142	56 <i>di</i>
2-Bromophenol	5	195			129	95 <i>tri</i>
Salicylaldehyde	2	197		128		106 <i>mono</i>
3-Methylphenol (m-cresol)	12	202	165	90	128	84 <i>tri</i>
4-Methylphenol (p-cresol)	35	202	188	98	146	198 <i>tetra</i>
2-Ethylphenol		207	108	57		
2,4-Dimethylphenol	27	212	164	105	135	
2-Hydroxyacetophenone	28	215				
Methyl salicylate		224		128		
3-Methoxyphenol		243			129	104 <i>tri</i>
4-Allyl-2-methoxyphenol		255	131	81	122	118 <i>tetra</i>
2-Methoxy-4-propenylphenol		268	158	109	150	
2-Methoxyphenol	32	205	141	93	118	116 <i>tri</i>
3-Bromophenol	32	236			108	
3 Chlorophenol	33	214	156	99		158
4-Methylphenol (p-cresol)	35	202	188	98	146	198 <i>tetra</i>
2-Nitro-4-methylphenol	36		192			
2,4-Dibromophenol	36	238		183		95 <i>tri</i>
Phenol	42	182	146	127	132	95 <i>tri</i>
4-Chlorophenol	43	217	186	171		166
2,4-Dichlorophenol	43	209	142			68 <i>mono</i>
2-Nitrophenol	45	216	155	141	113	117 <i>di</i>
4-Ethylphenol	47	219	133	81		128
4-Chloro-2-methylphenol	49	225				
2,6-Dimethylphenol	49	203	159		176	79 <i>mono</i>
5-Methyl-2-isopropylphenol	49	233	103	70	160	55 <i>mono</i>

## Phenols (Continued)

Name of compound	M.p. (EC)	B.p. (EC)	Melting points of derivatives			
			3,5- Dinitro- benzoate	4-Nitro- benzoate	"-Naphthyl- urethane	Bromo derivative
4-Methoxyphenol	55	244	166			
2,5-Dichlorophenol	59	212				
3,4-Dimethylphenol	63	225	181		142	171 <i>tri</i>
4-Bromophenol	64	238	191	180	169	95 <i>tri</i>
4-Chloro-3-methylphenol	66				153	
2,6-Dichlorophenol	67	219				
3,5-Dimethylphenol	68	219	195	109		166 <i>tri</i>
3,5-Dichlorophenol	68	233				189 <i>tri</i>
3,4-Dichlorophenol	68	252				
2,4,5-Trichlorophenol	68	248				
2,4,6-Trichlorophenol	68	245		106		
2,4,6-Trimethylphenol	69	220				158 <i>di</i>
2,6-Di-tert-butyl-4-methylphenol	70	265				
2,5-Dimethylphenol	75	212	137	87	173	178 <i>tri</i>
8-Hydroxyquinoline	76			175		
4-Hydroxy-3-methoxybenzaldehyde	81	285				
1-Naphthol	94	280	217	143	152	105 <i>di</i>
2,3,5-Trimethylphenol	96	233				
2-Methyl-4-nitrophenol	96	190				
3-Nitrophenol	97		159	174	167	91 <i>di</i>
4-tert-Butylphenol	100	237			110	50
1,2-Dihydroxybenzene	105	245	152 <i>di</i>	169 <i>di</i>	175	193 <i>tetra</i>
3,5-Dihydroxytoluene	106	290	190	214	160	104 <i>tri</i>
1,3-Dihydroxybenzene	110	281	201	182 <i>di</i>		112 <i>tri</i>
2-Chloro-4-nitrophenol	111					
4-Nitrophenol	114		188	159	151	145 <i>di</i>
2,4-Dinitrophenol	114			139		118 <i>mono</i>

## Phenols (Continued)

Name of compound	M.p. (EC)	B.p. (EC)	Melting points of derivatives			
			3,5-Dinitrobenzoate	4-Nitrobenzoate	"-Naphthyl-urethane	Bromo derivative
4-Hydroxybenzaldehyde	117					
1,3,5-Trihydroxybenzene	117			283		151 <i>tri</i>
2,3,5,6-Tetramethylphenol	118	249				118 <i>mono</i>
2,4,6-Trinitrophenol	122					
2-Naphthol	123	286	210	169	157	84 <i>mono</i>
3-Methyl-4-nitrophenol	129					
1,2,3-Trihydroxybenzene	133		205	230		158 <i>di</i>
2,4-Dihydroxyacetophenone	147					
Salicylic Acid	158			205		
2,3-Dihydroxynaphthalene	160					
1,4-Dihydroxybenzene	171	286	317	258		186 <i>di</i>
3,5-Dinitrosalicylic acid	173					
2-Aminophenol	174					
1,4-Dihydroxynaphthalene	176				220	
4-Aminophenol	184		178			
2,7-Dihydroxynaphthalene	190					
Pentachlorophenol	190					
3-Hydroxybenzoic acid	200					
4-Hydroxybenzoic acid	215					
1,3,5-Trihydroxybenzene	217		162	283		151 <i>tri</i>
1,5-Dihydroxynaphthalene	265					
4,4'-Biphenol	274					