

ALCOHOLS

COMPOUND	BP	MP	3,5-DINITRO-BENZOATE*	PHENYL-URETHANE*
Methanol	65	—	—	—
Ethanol	78	—	108	47
2-Propanol (Isopropyl alcohol)	82	—	93	52
2-Methyl-2-propanol ( <i>t</i> -Butyl alcohol)	83	26	123	88
2-Propen-1-ol (Allyl alcohol)	—	—	142	136
1-Propanol	97	—	49	—
2-Butanol ( <i>sec</i> -Butyl alcohol)	97	—	74	70
2-Methyl-2-butanol ( <i>t</i> -Pentyl alcohol)	99	—	76	57
2-Methyl-3-butyn-2-ol	102	-8.5	116	65
2-Methyl-1-propanol (Isobutyl alcohol)	104	—	—	42
2-Propyn-1-ol (Propargyl alcohol)	108	—	112	—
3-Pentanol	114	—	87	86
1-Butanol	115	—	—	—
2-Pentanol	118	—	101	48
3-Methyl-3-pentanol	119	—	64	61
2-Methoxyethanol	123	—	62	—
2-Chloroethanol	124	—	96	43
2-Methyl-1-butanol (Isoamyl alcohol)	129	—	—	(113)†
4-Methyl-2-pentanol	130	—	95	51
1-Pentanol	132	—	70	31
Cyclopentanol	138	—	65	143
2-Ethyl-1-butanol	140	—	46	46
2,2,2-Trichloroethanol	146	—	115	132
1-Hexanol	151	—	51	—
Cyclohexanol	157	—	142	87
(2-Furyl)-methanol (Furfuryl alcohol)	160	—	58	42
1-Heptanol	170	—	113	82
2-Octanol	176	—	80	45
1-Octanol	179	—	47	60
3,7-Dimethyl-1,6-octadien-3-ol (Linalool)	195	—	32	114
Benzyl alcohol	196	—	61	74
1-Phenylethanol	204	—	—	66
2-Phenylethanol	204	20	113	77
1-Decanol	219	—	92	95
3-Phenylpropanol	231	7	108	78
1-Dodecanol (Lauryl alcohol)	236	—	57	59
3-Phenyl-2-propen-1-ol (Cinnamyl alcohol)	—	24	45	92
1-Tetradecanol (Myristyl alcohol)	250	34	60	74
(-)-Menthol	—	39	121	90
1-Hexadecanol (Cetyl alcohol)	—	—	67	74
1-Octadecanol (Stearyl alcohol)	212	41	—	—
Diphenylmethanol (Benzhydrol)	—	49	158	111
Benzoin	—	59	66	73
Cholesterol	288	68	77	79
(+)-Borneol	—	133	141	139
	—	147	—	165
	—	208	—	168
			154	138

\* See "Procedures for Preparing Derivatives," Appendix 2.  
† *n*-Naphthylurethane

**ALDEHYDES**

COMPOUND	BP	MP	SEMI-CARBAZONE*	2,4-DINITROPHENYL-HYDRAZONE*
Ethanal (Acetaldehyde)	21	—	162	168
Propanal (Propionaldehyde)	48	—	89	148
Propenal (Acrolein)	52	—	171	165
2-Methylpropanal (Isobutyraldehyde)	64	—	125	187
Butanal (Butyraldehyde)	75	—	95	123
3-Methylbutanal (Isovaleraldehyde)	92	—	107	123
Pentanal (Valeraldehyde)	102	—	—	106
2-Butenal (Crotonaldehyde)	104	—	199	190
2-Ethylbutanal <sup>1</sup> / <sub>2</sub> (Diethylacetaldehyde)	117	—	99	95
Hexanal (Caproaldehyde)	130	—	106	104
Heptanal (Heptaldehyde)	153	—	109	108
2-Furaldehyde (Furfural)	162	—	202	212
2-Ethylhexanal	163	—	254	114
Octanal (Caprylaldehyde)	171	—	101	106
Benzaldehyde	179	—	222	237
Phenylethanal (Phenylacetaldehyde)	195	33	153	121
2-Hydroxybenzaldehyde (Salicylaldehyde)	197	—	231	248
4-Methylbenzaldehyde ( <i>p</i> -Tolualdehyde)	204	—	234	234
3,7-Dimethyl-6-octenal (Citronellal)	207	—	82	77
2-Chlorobenzaldehyde	213	11	229	213
—4-Methoxybenzaldehyde ( <i>p</i> -Anisaldehyde)	248	2.5	210	253
— <i>trans</i> -Cinnamaldehyde	250 d.	—	215	255
—3,4-Methylenedioxybenzaldehyde (Piperonal)	263	37	230	266 d.
—2-Methoxybenzaldehyde ( <i>o</i> -Anisaldehyde)	245	38	215 d.	254
4-Chlorobenzaldehyde	214	48	230	254
3-Nitrobenzaldehyde	—	58	246	293
4-Dimethylaminobenzaldehyde	—	74	222	325
Vanillin	285 d.	82	230	271
4-Nitrobenzaldehyde	—	106	221	320 d.
4-Hydroxybenzaldehyde	—	116	224	280 d.
(±)-Glyceraldehyde	—	142	160 d.	167

NOTE: "d" indicates decomposition.

\* See "Procedures for Preparing Derivatives," Appendix 2.

**PRIMARY AMINES**

COMPOUND	BP	MP	BENZAMIDE*	PICRATE*	ACETAMIDE*
<i>n</i> -Butylamine	46	—	134	198	101
Propylamine	48	—	84	135	—
Allylamine	56	—	—	140	—
<i>sec</i> -Butylamine	63	—	76	139	—
Isobutylamine	69	—	57	150	—
Butylamine	78	—	42	151	—
Cyclohexylamine	135	—	149	—	104
Furfurylamine	145	—	—	150	—
Benzylamine	184	—	105	194	60
Aniline	184	—	163	198	114
2-Methylaniline	200	—	144	213	110
( <i>o</i> -Toluidine)					
3-Methylaniline	203	—	125	200	65
( <i>m</i> -Toluidine)					
2-Chloroaniline	208	—	99	134	87
2,6-Dimethylaniline	216	11	168	180	177
2-Methoxyaniline	225	6	60	200	85
( <i>o</i> -Anisidine)					
3-Chloroaniline	230	—	120	177	74
2-Ethoxyaniline	231	—	104	—	79
( <i>o</i> -Phenetidine)					
4-Chloro-2-methylaniline	241	29	142	—	140
4-Ethoxyaniline	250	2	173	69	137
( <i>p</i> -Phenetidine)					
4-Methylaniline	200	43	158	182	147
( <i>p</i> -Toluidine)					
2-Ethylaniline	210	47	147	194	111
2,5-Dichloroaniline	251	50	120	86	132
4-Methoxyaniline	—	58	154	170	130
( <i>p</i> -Anisidine)					
4-Bromoaniline	245	64	204	180	168
2,4,5-Trimethylaniline	—	64	167	—	162
4-Chloroaniline	—	70	192	178	179
2-Nitroaniline	—	72	110	73	92
Ethyl <i>p</i> -aminobenzoate	—	89	148	—	110
<i>o</i> -Phenylenediamine	258	102	301 (di)	208	185 (di)
2-Methyl-5-nitroaniline	—	106	186	—	151
2-Chloro-4-nitroaniline	—	108	161	—	139
3-Nitroaniline	—	114	157	143	155
4-Chloro-2-nitroaniline	—	118	—	—	104
2,4,6-Tribromoaniline	300	120	200	—	232 (mono)
2-Methyl-4-nitroaniline	—	130	—	—	127 (di)
2-Methoxy-4-nitroaniline	—	138	149	—	202
<i>p</i> -Phenylenediamine	267	140	128 (mono)	—	153
4-Nitroaniline	—	148	300 (di)	—	162 (mono)
4-Aminoacetanilide	—	162	199	100	304 (di)
2,4-Dinitroaniline	—	180	202	—	215
					304
					120

\*See "Procedures for Preparing Derivatives," Appendix 2.

### SECONDARY AMINES

COMPOUND	BP	MP	BENZAMIDE*	PICRATE*	ACETAMIDE*
Diethylamine	56	—	42	155	—
Diisopropylamine	84	—	—	140	—
Pyrrolidine	88	—	Oil	112	—
Piperidine	106	—	48	152	—
Dipropylamine	110	—	—	75	—
Morpholine	129	—	75	146	—
Diisobutylamine	139	—	—	121	—
<i>N</i> -Methylcyclohexylamine	148	—	85	170	86
Dibutylamine	159	—	—	59	—
Benzylmethylamine	184	—	—	117	—
<i>N</i> -Methylaniline	196	—	63	145	—
<i>N</i> -Ethylaniline	205	—	60	132	102
<i>N</i> -Ethyl- <i>m</i> -toluidine	221	—	72	—	54
Dicyclohexylamine	256	—	153	—	—
<i>N</i> -Benzylaniline	298	37	107	173	103
Indole	254	52	68	48	58
Diphenylamine	302	52	180	—	157
<i>N</i> -Phenyl-1-naphthylamine	335	62	152	182	101
				—	115

\* See "Procedures for Preparing Derivatives," Appendix 2.

### TERTIARY AMINES

COMPOUND	BP	MP	PICRATE*	METHIODIDE*
Triethylamine	89	—	173	280
Pyridine	115	—	167	117
2-Methylpyridine ( $\alpha$ -Picoline)	129	—	169	230
3-Methylpyridine ( $\beta$ -Picoline)	144	—	150	92
Tripropylamine	157	—	116	207
<i>N,N</i> -Dimethylbenzylamine	183	—	93	179
<i>N,N</i> -Dimethylaniline	193	—	163	228 d.
Tributylamine	216	—	105	186
<i>N,N</i> -Diethylaniline	217	—	142	102
Quinoline	237	—	203	133

NOTE: "d" indicates decomposition.

\* See "Procedures for Preparing Derivatives," Appendix 2.

**CARBOXYLIC ACIDS**

COMPOUND	BP	MP	<i>p</i> -TOLUIDIDE*	ANILIDE*	AMIDE*
Formic acid	101	8	53	47	43
Acetic acid	118	17	148	114	82
Propenoic acid (Acrylic acid)	139	13	141	104	85
Propanoic acid (Propionic acid)	141	—	124	103	81
2-Methylpropanoic acid (Isobutyric acid)	154	—	104	105	128
Butanoic acid (Butyric acid)	162	—	72	95	115
2-Methylpropenoic acid (Methacrylic acid)	163	16	—	87	102
Trimethylacetic acid (Pivalic acid)	164	35	—	127	178
Pyruvic acid	165 d.	14	109	104	124
3-Methylbutanoic acid (Isovaleric acid)	176	—	109	109	135
Pentanoic acid (Valeric acid)	186	—	70	63	106
2-Methylpentanoic acid	186	—	80	95	79
2-Chloropropanoic acid	186	—	124	92	80
Dichloroacetic acid	194	6	153	118	98
Hexanoic acid (Caproic acid)	205	—	75	95	101
2-Bromopropanoic acid	205	24	125	99	123
Octanoic acid (Caprylic acid)	237	16	70	57	107
Nonanoic acid	254	12	84	57	99
Decanoic acid (Capric acid)	268	32	78	70	108
4-Oxopentanoic acid (Levulinic acid)	246	33	108	102	108 d.
Dodecanoic acid (Lauric acid)	299	43	87	78	100
3-Phenylpropanoic acid (Hydrocinnamic acid)	279	48	135	98	105
Bromoacetic acid	208	50	—	131	91
Tetradecanoic acid (Myristic acid)	—	54	93	84	103
Trichloroacetic acid	198	57	113	97	141
Hexadecanoic acid (Palmitic acid)	—	62	98	90	106
Chloroacetic acid	189	63	162	137	121
Octadecanoic acid (Stearic acid)	—	69	102	95	109
<i>trans</i> -2-Butenoic acid (Crotonic acid)	—	72	132	118	158
Phenylacetic acid	—	77	136	118	156
2-Methoxybenzoic acid ( <i>o</i> -Anisic acid)	200	101	—	131	129
2-Methylbenzoic acid ( <i>o</i> -Toluic acid)	—	104	144	125	142
Nonanedioic acid (Azelaic acid)	—	106	201 (di)	107 (mono) 186 (di)	93 (mono) 175 (di)
3-Methylbenzoic acid ( <i>m</i> -Toluic acid)	263 s.	110	118	126	94
(±)-Phenylhydroxyacetic acid (Mandelic acid)	—	118	172	151	133
Benzoic acid	249	122	158	163	130
2-Benzoylbenzoic acid	—	127	—	195	165
Maleic acid	—	130	142 (di)	198 (mono) 187 (di)	172 (mono) 260 (di)
Decanedioic acid (Sebacic acid)	—	133	201 (di)	122 (mono) 200 (di)	170 (mono) 210 (di)
Cinnamic acid	300	133	168	153	147

NOTE: "s" indicates "sublimes"; "d" indicates decomposition.

\* See "Procedures for Preparing Derivatives," Appendix 2.

**CARBOXYLIC ACIDS (Continued)**

COMPOUND	BP	MP	p-TOLUIDIDE*	ANILIDE*	AMIDE*
2-Chlorobenzoic acid	—	140	131	118	139
3-Nitrobenzoic acid	—	140	162	155	143
2-Aminobenzoic acid (Anthranilic acid)	—	146	151	131	109
Diphenylacetic acid	—	148	172	180	167
2-Bromobenzoic acid	—	150	—	141	155
Benzilic acid	—	150	190	175	154
Hexanedioic acid (Adipic acid)	—	152	239	151 (mono)	125 (mono)
Citric acid	—	153	189 (tri)	241 (di)	220 (di)
4-Chlorophenoxyacetic acid	—	158	—	199 (tri)	210 (tri)
2-Hydroxybenzoic acid (Salicylic acid)	—	158	156	125	133
5-Bromo-2-hydroxybenzoic acid (5-Bromosalicylic acid)	—	165	—	136	142
Methylenesuccinic acid (Itaconic acid)	—	166 d.	—	222	232
(+)-Tartaric acid	—	169	—	152 (mono)	191 (di)
4-Chloro-3-nitrobenzoic acid	—	180	—	180 (mono)	171 (mono)
4-Methylbenzoic acid (p-Toluic acid)	—	180	160	264 (di)	196 (di)
4-Methoxybenzoic acid (p-Anisic acid)	280	184	186	131	156
Butanedioic acid (Succinic acid)	235 d.	188	180 (mono)	145	160
3-Hydroxybenzoic acid	—	201	255 (di)	169	167
3,5-Dinitrobenzoic acid	—	202	163	143 (mono)	157 (mono)
Phthalic acid	—	210 d.	—	230 (di)	260 (di)
4-Hydroxybenzoic acid	—	214	150 (mono)	157	170
Pyridine-3-carboxylic acid (Nicotinic acid)	—	236	201 (di)	234	183
4-Nitrobenzoic acid	—	240	204	169 (mono)	144 (mono)
4-Chlorobenzoic acid	—	242	150	253 (di)	220 (di)
Fumaric acid	—	300	—	197	162
				132	128
				211	201
				194	179
				233 (mono)	270 (mono)
				314 (di)	266 (di)

NOTE: "d" indicates decomposition.

\* See "Procedures for Preparing Derivatives," Appendix 2.

### ESTERS

COMPOUND	BP	MP	COMPOUND	BP	MP
Methyl formate	34	—	Pentyl acetate	142	—
Ethyl formate	54	—	( <i>n</i> -Amyl acetate)		
Vinyl acetate	72	—	3-Methylbutyl acetate	142	—
Ethyl acetate	77	—	(Isoamyl acetate)		
Methyl propanoate	77	—	Ethyl chloroacetate	143	—
(Methyl propionate)			Ethyl lactate	154	—
Methyl acrylate	80	—	Ethyl hexanoate	168	—
2-Propyl acetate	85	—	(Ethyl caproate)		
(Isopropyl acetate)			Methyl acetoacetate	170	—
Ethyl chloroformate	93	—	Dimethyl malonate	180	—
Methyl 2-methylpropanoate	93	—	Ethyl acetoacetate	181	—
(Methyl isobutyrate)			Diethyl oxalate	185	—
2-Propenyl acetate	94	—	Methyl benzoate	199	—
(Isopropenyl acetate)			Ethyl octanoate	207	—
2-(2-Methylpropyl) acetate	98	—	(Ethyl caprylate)		
( <i>t</i> -Butyl acetate)			Ethyl cyanoacetate	210	—
Ethyl acrylate	99	—	Ethyl benzoate	212	—
Ethyl propanoate	99	—	Diethyl succinate	217	—
(Ethyl propionate)			Methyl phenylacetate	218	—
Methyl methacrylate	100	—	Diethyl fumarate	219	—
Methyl trimethylacetate	101	—	Methyl salicylate	222	—
(Methyl pivalate)			Diethyl maleate	225	—
Propyl acetate	102	—	Ethyl phenylacetate	229	—
Methyl butanoate	102	—	Ethyl salicylate	234	—
(Methyl butyrate)			Dimethyl suberate	268	—
2-Butyl acetate	111	—	Ethyl cinnamate	271	—
( <i>sec</i> -Butyl acetate)			Diethyl phthalate	298	—
Methyl 3-methylbutanoate	117	—	Dibutyl phthalate	340	—
(Methyl isovalerate)			Methyl cinnamate	—	36
Ethyl butanoate	120	—	Phenyl salicylate	—	42
(Ethyl butyrate)			Methyl <i>p</i> -chlorobenzoate	—	44
Butyl acetate	127	—	Ethyl <i>p</i> -nitrobenzoate	—	56
Methyl pentanoate	128	—	Phenyl benzoate	314	69
(Methyl valerate)			Methyl <i>m</i> -nitrobenzoate	—	78
Methyl chloroacetate	130	—	Methyl <i>p</i> -bromobenzoate	—	81
Ethyl 3-methylbutanoate	132	—	Ethyl <i>p</i> -aminobenzoate	—	90
(Ethyl isovalerate)			Methyl <i>p</i> -nitrobenzoate	—	94

TABLES OF UNKNOWNNS AND DERIVATIVES

KETONES

COMPOUND	BP	MP	SEMI-CARBAZONE*	2,4-DINITROPHENYL-HYDRAZONE*
2-Propanone (Acetone)	56	—	187	126
2-Butanone (Methyl ethyl ketone)	80	—	146	117
3-Methyl-2-butanone (Isopropyl methyl ketone)	94	—	112	120
2-Pentanone (Methyl propyl ketone)	101	—	112	143
3-Pentanone (Diethyl ketone)	102	—	138	156
Pinacolone	106	—	157	125
4-Methyl-2-pentanone (Isobutyl methyl ketone)	117	—	132	95
2,4-Dimethyl-3-pentanone (Diisopropyl ketone)	124	—	160	95
2-Hexanone (Methyl butyl ketone)	128	—	125	106
4-Methyl-3-penten-2-one (Mesityl oxide)	130	—	164	205
Cyclopentanone	131	—	210	146
2,3-Pentanedione	134	—	122 (mono) 209 (di)	209
2,4-Pentanedione (Acetylacetone)	139	—	—	122 (mono) 209 (di)
4-Heptanone (Dipropyl ketone)	144	—	132	75
2-Heptanone (Methyl amyl ketone)	151	—	123	89
Cyclohexanone	156	—	166	162
2,6-Dimethyl-4-heptanone (Diisobutyl ketone)	168	—	122	92
2-Octanone	173	—	122	58
Cycloheptanone	181	—	163	148
2,5-Hexanedione (Acetylacetone)	191	-9	185 (mono) 224 (di)	257 (di)
Acetophenone (Methyl phenyl ketone)	202	20	198	238
Phenyl-2-propanone (Phenylacetone)	216	27	198	156
Propiophenone (Ethyl phenyl ketone)	218	21	182	191
4-Methylacetophenone	226	—	205	258
2-Undecanone	231	12	122	63
4-Chloroacetophenone	232	12	204	236
4-Phenyl-2-butanone (Benzylacetone)	235	—	142	127
4-Chloropropiophenone	—	36	176	223
4-Phenyl-3-buten-2-one	—	37	187	227
4-Methoxyacetophenone	258	38	198	228
Benzophenone	305	48	167	238
4-Bromoacetophenone	225	51	208	230
2-Acetonaphthone	—	54	235	262
Desoxybenzoin	320	60	148	204
3-Nitroacetophenone	202	80	257	228
9-Fluorenone	345	83	234	283
Benzoin	344	136	206	245
4-Hydroxypropiophenone	—	148	—	229
(±)-Camphor	205	179	237	177

\* See "Procedures for Preparing Derivatives," Appendix 2.

**PHENOLS‡**

COMPOUND	BP	MP	$\alpha$ -NAPHTHYL- URETHANE*	BROMO DERIVATIVE*			
				Mono	Di	Tri	Tetra
2-Chlorophenol	176	7	120	48	76	—	—
3-Methylphenol ( <i>m</i> -Cresol)	203	12	128	—	—	84	—
2-Methylphenol ( <i>o</i> -Cresol)	191	32	142	—	56	—	—
2-Methoxyphenol (Guaiacol)	204	32	118	—	—	116	—
4-Methylphenol ( <i>p</i> -Cresol)	202	34	146	—	49	—	198
Phenol	181	42	133	—	—	95	—
4-Chlorophenol	217	43	166	33	90	—	—
2,4-Dichlorophenol	210	45	—	68	—	—	—
4-Ethylphenol	219	45	128	—	—	—	—
2-Nitrophenol	216	45	113	—	117	—	—
2-Isopropyl-5-methylphenol (Thymol)	234	51	160	55	—	—	—
3,4-Dimethylphenol	225	64	141	—	—	171	—
4-Bromophenol	238	64	169	—	—	95	—
3,5-Dimethylphenol	220	68	109	—	—	166	—
2,5-Dimethylphenol	212	75	173	—	—	178	—
1-Naphthol ( $\alpha$ -Naphthol)	278	96	152	—	105	—	—
2-Hydroxyphenol (Catechol)	245	104	175	—	—	—	192
3-Hydroxyphenol (Resorcinol)	281	109	275	—	—	112	—
4-Nitrophenol	—	112	150	—	142	—	—
2-Naphthol ( $\beta$ -Naphthol)	286	121	157	84	—	—	—
1,2,3-Trihydroxybenzene (Pyrogallol)	309	133	—	—	158	—	—
4-Phenylphenol	305	164	—	—	—	—	—

\* See "Procedures for Preparing Derivatives," Appendix 2.

‡ Also check:

- Salicylic acid (2-Hydroxybenzoic acid)
- Esters of salicylic acid (salicylates)
- Salicylaldehyde (2-Hydroxybenzaldehyde)
- 4-Hydroxybenzaldehyde
- 4-Hydroxypropiophenone
- 3-Hydroxybenzoic acid
- 4-Hydroxybenzoic acid
- 4-Hydroxybenzophenone