

## CARBOXYLIC ACIDS

Compound	B.P	M.P	p-Toluidide	Anilide	Amide
Dichloroacetic acid	194	6	153	118	98
2-Methylpentanoic acid	195	--	80	95	79
Hexanoic acid	205	--	75	95	101
2-Bromopropanoic acid	205	24	125	99	123
Heptanoic acid	223	--	81	70	96
2-Ethylhexanoic acid	228	--	--	--	102
Cyclohexanecarboxylic acid	233	31	--	146	186
Octanoic acid (caprylic acid)	237	16	70	57	107
Nonanoic acid	254	12	84	57	99
Decanoic acid ( capric acid)	--	32	78	70	108
4-Oxopentanoic acid (levulinic acid)	--	33	108	102	108d
Trimethylacetic acid (pivalic acid)	--	35	120	130	155
3-Chloropropanoic acid	--	40	--	--	101
Dodecanoic acid (lauric acid)	--	43	87	78	100
3-Phenylpropanoic acid (Hydrocinnamic acid)	--	48	135	98	105
Bromoacetic acid	--	50	--	131	91
4-Phenylbutanoic acid	--	52	--	--	84
Tetradecanoic acid (myristic acid)	--	54	93	84	103
Trichloroacetic acid	--	57	113	97	141
3-Bromopropanoic acid	--	61	--	--	111
Hexadecanoic acid (palmitic acid)	--	62	98	90	106
Chloroacetic acid	--	63	162	137	121
Cyanoacetic acid	--	66	--	198	120
Octadecanoic acid (stearic acid)	--	69	102	95	109
Trans-2-Butenoic acid (crotonic acid)	--	72	132	118	158
Phenylacetic acid	--	77	136	118	156
$\alpha$ -Methyl-trans-cinnamic acid	--	81	--	--	128
4-Methoxyphenyl acetic acid	--	87	--	--	189
3,4-Dimethoxyphenyl acetic acid	--	97	--	--	147
Pentanedioic acid (glutaric acid)	--	98	218(di)	224 (di)	176(di)
Phenoxyacetic acid	--	99	--	99	102
2-Methoxybenzoic acid (o-anisic acid)	--	100	--	131	129
2-Methylbenzoic acid (o-toluic acid)	--	104	144	125	142
Nonanedioic acid (azelaic acid)	--	106	201(di)	107 (mono) 186 (di)	93 (mono) 175(di)
3-Methoxybenzoic acid (m-anisic acid)	--	107	--	--	136
3-Methylbenzoic acid (m-toluic acid)	--	111	118	126	94
4-Bromophenylacetic acid	--	117	--	--	194
Phenylhydroxyacetic acid (mandelic acid)	--	118	172	151	133
Benzoic acid	--	122	158	163	130
2,4-Dimethylbenzoic acid	--	126	--	141	180
2-Benzoylbenzoic acid	--	127	--	195	165

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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)
3-Chlorocinnamic acid	--	133	142	135	76
2-Furoic acid	--	133	170	124	143
Trans-Cennamic acid	--	133	168	153	147
2-Acetylsalicylic acid (aspirin)	--	138	--	136	138
5-Chloro-2-nitrobenzoic acid	--	139	--	164	154
2-Chlorobenzoic acid	--	140	131	118	139
3-Nitrobenzoic acid	--	140	162	155	143
4-Chloro-2-nitrobenzoic acid	--	142	--	--	172
2-Nitrobenzoic acid	--	146	--	155	176
2-Aminobenzoic 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) 241 (di)	125 (mono) 220 (di)
Citric acid	--	153	189(tri)	198 (tri)	210 (tri)
4-Nitrophenylacetic acid	--	153	--	198	198
2,5-Dichlorobenzoic acid	--	153	--	--	155
3-Chlorobenzoic acid	--	156	--	123	134
2,4-Dichlorobenzoic acid	--	158	--	--	194
4-Chlorophenoxyacetic acid	--	158	--	125	133
2-Hydroxybenzoic acid (salicylic acid)	--	158	156	136	142
5-Bromo-2-hydroxybenzoic acid (5-bromosalicylic acid)	--	165	--	222	232
3,4-Dimethylbenzoic acid	--	165	--	104	130
2-Chloro-5-nitrobenzoic acid	--	166	--	--	178
Methylenesuccinic acid (itaconic acid)	--	166	--	152 (mono)	191(di)
Tartaric acid	--	169	--	180 (mono) 264(di)	171 (mono) 196(di)
5-Chlorosalicylic acid	--	172	--	--	227
4-Methylbenzoic acid (p-toluic acid)	--	180	160	145	160
4-Chloro-3-nitrobenzoic acid	--	182	--	131	156
4-Methoxybenzoic acid (p-anisic acid)	--	184	186	169	167
Butanedioic acid ( succinic acid)	--	188	180(mono) 255(di)	143 (mono) 230(di)	157 (mono) 260(di)

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Compound	B.P	M.P	p-Toluidide	Anilide	Amide
Oxalic acid	--	189-191	--	--	--
4-Ethoxybenzoic acid	--	198	--	170	202
Fumaric acid	--	287	--	233 (mono) 314 (di)	270 (mono) 266 (di)
3-Hydroxybenzoic acid	--	201s	163	157	170
3,5-Dinitrobenzoic acid	--	202	--	234	183
3,4-Dichlorobenzoic acid	--	209	--	--	133
Phthalic acid	--	210d	150 (mono) 201(di)	169 (mono) 253 (di)	144 (mono) 220 (di)
4-Hydroxybenzoic acid	--	214	204	197	162
3-Nitrophthalic acid	--	215	226 (di)	234 (di)	201(di)
Pyridine-3-carboxylic acid (nicotinic acid)	--	236	150	132	128
4-Nitrobenzoic acid	--	240	204	211	201
4-Chlorobenzoic acid	--	242	--	194	179
4-Bromobenzoic acid	--	251	--	197	190

## ACID ANHYDRIDE

Compound	Molecular formula	M.P	B.P
Chlorodifluoroacetic anhydride	C <sub>4</sub> Cl <sub>2</sub> F <sub>4</sub> O <sub>3</sub>	--	96-97
Trichloroacetic anhydride	C <sub>4</sub> Cl <sub>6</sub> O <sub>3</sub>	--	130-141
Tetrafluorosuccinic anhydride	C <sub>4</sub> F <sub>4</sub> O <sub>3</sub>	--	54-56
Dichloroacetic anhydride	C <sub>4</sub> H <sub>2</sub> Cl <sub>4</sub> O <sub>3</sub>	--	214-216
Maleic anhydride	C <sub>4</sub> H <sub>2</sub> O <sub>3</sub>	51-56	200
Chloroacetic anhydride	C <sub>4</sub> H <sub>4</sub> Cl <sub>2</sub> O <sub>3</sub>	48-60	120-123
Iodoacetic anhydride	C <sub>4</sub> H <sub>4</sub> I <sub>2</sub> O <sub>3</sub>	47-49	--
Acetic anhydride	C <sub>4</sub> H <sub>6</sub> O <sub>3</sub>	-73	138-140
Pentafluoropropionic anhydride	C <sub>6</sub> F <sub>10</sub> O <sub>3</sub>	--	69-70
Propionic anhydride	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	-43	167
1-cyclopentene-1,2-dicarboxylic anhydride	C <sub>7</sub> H <sub>6</sub> O <sub>3</sub>	42-45	133-135
Heptafluorobutyric anhydride	C <sub>8</sub> F <sub>14</sub> O <sub>3</sub>	-43	108-110
3-Fluorophthalic anhydride	C <sub>8</sub> H <sub>3</sub> FO <sub>3</sub>	158-161	
4-Fluorophthalic anhydride	C <sub>8</sub> H <sub>3</sub> FO <sub>3</sub>	75-79	
phthalic anhydride	C <sub>8</sub> H <sub>4</sub> O <sub>3</sub>	131-134	284
Cyclobutane-1,2,3,4-tetracarboxylic dianhydride	C <sub>4</sub> H <sub>4</sub> O <sub>6</sub>	>300	
Butyric anhydride	C <sub>8</sub> H <sub>14</sub> O <sub>3</sub>	-66 - -75	198-199
Isobutyric anhydride	C <sub>8</sub> H <sub>14</sub> O <sub>3</sub>	-56	182
Bicyclo[2,2,1]hept-5-ene-2,3-dicarboxylic anhydride	C <sub>9</sub> H <sub>10</sub> O <sub>3</sub>	158-165	--
Methyltetrahydrophthalic anhydride	C <sub>9</sub> H <sub>10</sub> O <sub>3</sub>	--	292
Methyl-5-norbornene-2,3-dicarboxylic anhydride	C <sub>10</sub> H <sub>10</sub> O <sub>3</sub>	--	140
Camphoric acid anhydride	C <sub>10</sub> H <sub>14</sub> O <sub>3</sub>	222-225	--
4-pentaenoic anhydride	C <sub>10</sub> H <sub>14</sub> O <sub>3</sub>	--	78-81
Isovaleric anhydride	C <sub>10</sub> H <sub>18</sub> O <sub>3</sub>	--	105
Trimethylacetic anhydride	C <sub>10</sub> H <sub>18</sub> O <sub>3</sub>	--	193
Valeric anhydride	C <sub>10</sub> H <sub>18</sub> O <sub>3</sub>	-56	228-230
3-(tert-Butyldimethylsilyloxy)glutaric anhydride	C <sub>11</sub> H <sub>20</sub> O <sub>4</sub> Si	79-80	--
4-chloro-1,8-naphthalic anhydride	C <sub>12</sub> H <sub>22</sub> ClO <sub>3</sub>	202-206	--
Hexanoic anhydride	C <sub>12</sub> H <sub>22</sub> O <sub>3</sub>		246-248
Benzoic anhydride	C <sub>14</sub> H <sub>10</sub> O <sub>3</sub>	38-42	--
2-methyl-6-nitrobenzoic anhydride	C <sub>16</sub> H <sub>12</sub> N <sub>2</sub> O <sub>7</sub>	173-177	--
Phenoxyacetic anhydride	C <sub>16</sub> H <sub>14</sub> O <sub>5</sub>	70-74	--
(2-dodecen-1-yl)succinic anhydride	C <sub>16</sub> H <sub>26</sub> O <sub>3</sub>	41-43	180-182
2-phenylbutyric acid anhydride	C <sub>20</sub> H <sub>38</sub> O <sub>3</sub>	--	132
Decanoic anhydride	C <sub>20</sub> H <sub>38</sub> O <sub>3</sub>	24-25	125-140
1-Naphthaleneacetic anhydride	C <sub>24</sub> H <sub>18</sub> O <sub>3</sub>	116-119	--
Dodecanoic anhydride	C <sub>24</sub> H <sub>46</sub> O <sub>3</sub>	41-43	--
Myristic anhydride	C <sub>28</sub> H <sub>54</sub> O <sub>3</sub>	53-55	--