

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
1. Primary and secondary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)*

No	Name	Boiling point, °C	Melting point, °C	n_D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> -Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
1	Methylamine	-6			0 699 ₄ ¹¹	28	80	30	75	113	207, 215	
2	Dimethylamine	7			0 680 ₄ ⁹		41	47	79	135	158	
3	Ethylamine	16.5			0 705 ₇ ⁴		71	58	63	106	165	
4	Isopropylamine	19 33		1 377 ¹⁵	0 691 ₄ ⁸			26		135 101		1-Naphthylurea, 200, 1-Naphthylthiourea, 143
5	Ethyl methyl amine	36									196	Chloroplatinate, 207, Hydrochloride, 126-30
6	<i>tert</i> -Butylamine	46		1 379 ₄ ¹⁸	0 700 ₄ ¹⁵	101 2	134			120	198	Hydrochloride, 270-80
7	<i>n</i> -Propylamine	49		1 390 ₁ ¹⁷	0 714 ₂ ²⁵		84	36	52	63	135	1-Naphthylurea, 196
8	Isopropyl methyl amine	50			0 702 ₆ ¹⁹					120	135	Phenylurea, 131
9	Cyclopropylamine	50		1 421 ²⁰	0 824 ₂ ²⁰		99	120 (<i>dt</i>)			149	Hydrochloride, 100
10	Ethyleneimine	56			0 832 ²⁴				52		142	Oxalate, 115
11	Diethylamine	56		1 387 ₃ ¹⁸	0 710 ₈ ¹⁸		42	42	60	34	155	1-Naphthylthiourea, 108
12	Allylamine	58		1 419 ₄ ²²	0 743 ₆ ²⁰			39	64	98	140	
13	DL- <i>sec</i> - <i>n</i> -Butylamine (2-Aminobutane)	63		1 395 ¹⁷	0 718 ²⁰		76	70	55	101	139 40	
14	<i>unsym</i> -Dimethylhydrazine	63		1 407 ₅ ²²	0 791 ₄ ²²							Hydrochloride, 81-2, Oxalate, 142, Sulfate, 105
15	Trimethyleneimine (Azetidine)	63		1 428 ₇ ²⁴	0 843 ₆ ²⁰						166-7	Chloroplatinate, 203, Chloroaurate, 192
16	Isobutylamine	69		1 398 ₈ ¹⁷	0 724 ₂ ²⁵		57	53	78	82	150	
17	<i>n</i> -Butylamine	77		1 401	0 740 ₁ ²⁰					65	151	1-Naphthylurea, 149, 1-Naphthylthiourea, 108-9, Hydrochloride, 195
18	2-Amino-2-methylbutane	78			0 756 ₀ ⁹						183	
19	DL- <i>sec</i> -Butyl methyl amine	78 9			0 740 ¹⁵						78	Chloroplatinate, 151
20	Ethyl propyl amine	80 1		1 3966	0 773 ²⁴							Hydrochloride, 225, Chloroplatinate, 198, Chloroaurate, 86
21	<i>Sym</i> -Dimethylhydrazine	81		1 420 ₉ ²⁰	0 827 ₄ ²⁰						147 50	Oxalate, 119, Hydrochloride, 168
22	Cyclobutylamine	82		1 436 ₃ ¹⁹	0 832 ₈ ²⁰							Chloroplatinate, 210 5
23	Di-isopropylamine	84			0 722 ²²						140	N-Nitroso, 48, Chloroplatinate, 186 9, Hydrochloride, 216-7
24	Pyrrolidine	89		1 427 ₀ ¹⁵	0 852 ²²				123		112, yel, 163-4, red	
25	<i>n</i> -Butyl methyl amine	90-1		1 401 ₈ ¹⁸	0 736 ₇ ¹⁵						111	Hydrochloride, 170, Chloroplatinate, 205
26	5-Amino-1-pentene	91-4										Chloroplatinate, 166, Chloroaurate, 195
27	DL-2-Amino- <i>n</i> -pentane (<i>sec</i> - <i>n</i> -Amylamine)	92			0 738 ₄ ²⁰							Hydrochloride, 168, Oxalate, 226, 131
28	Isoamylamine	96		1 409 ₆ ¹⁸	0 751 ¹⁸					102	138	Chloroaurate, 82-3 1-Naphthylurea, 132

*Derivative data given in order m.p, crystal color, solvent from which crystallized.

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1. Primary and secondary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)* (Continued)

No	Name	Boiling point °C	Melting point, °C	n_D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
29	D-2-Methyl- <i>n</i> -butylamine (<i>active</i> -Amylamine)	96			0.7505 ₄ ²⁵							$[\alpha]_D^{25} - 5.86$, Hydrochloride, 176, Chloroplatinate, 240
30	2-Methylpyrrolidine	97.8			0.84 ₂₀ ²⁰						88.5, 9.5	Oxalate, 178.9, Chloroplatinate, 172.3 (anh.), 206-7, rapid htng Picrate of <i>N</i> -methyl deriv., 235
31	3-Methylpyrrolidine	103.5		1.4480 ²⁰	0.8654 ₄ ⁰						106	Chloroplatinate, 194
32	<i>n</i> -Amylamine	104			0.7614 ₂₀ ²⁰					69	139	2-Naphthylthiourea, 114
33	2-(Methylamino)- <i>n</i> -pentane	105			0.947 ²⁰						77.8	Chloroplatinate, 138
34	Piperidine	106		1.4530 ²⁰	0.8606 ₄ ²⁰	48		93.4	96	101	152	
35	2-Aminodiethylether	108.9		1.4101 ²⁰	0.8512 ₄ ²⁰						122	Picronate, 204
36	Di- <i>n</i> -propylamine	109.10		1.4046 ²⁰	0.7384 ₂₀ ²⁰			51		69	75	1-Naphthylurea, 93
37	2,5-Dimethylpyrrolidine	110.3		1.4357 ¹⁵	0.8185 ₄ ¹⁴						117.8	Hydrochloride, 188.90, Chloroplatinate, 225
38	2,4-Dimethylpyrrolidine	115.7		1.4325 ²⁰	0.8297 ₄ ²⁰						116.7	Chloroplatinate, 210
39	1,2-Ethylenediamine	116	8.5	1.454 ²⁶	0.898 ₄ ²⁵	172 (<i>di</i>)	244 (<i>di</i>)	168 (<i>di</i>)	360 (<i>di</i>)	102	233 (<i>di</i>)	
40	L-2-Methylpiperidine	117	50.1								116.7	Hydrochloride, 190, Chloroplatinate, 194
41	DL-2-Methylpiperidine	118-9		1.4464 ²⁴	0.8436 ₄ ²⁴		45		55		164	Hydrochloride, 207, Oxalate, 125
42	DL-1,2-Diaminopropane	119-20			0.878 ¹⁵	139 (<i>di</i>)	192 (<i>di</i>)				135 (<i>di</i>)	
43	Isohexylamine	125			0.758 ₄ ²⁵						123.5	Hydrochloride, 220, Oxalate, 166, Chloroplatinate, 200
44	DL-3-Methylpiperidine	126		1.446 ²⁴	0.845 ₄ ²⁴						138 (<i>di</i>)	Hydrochloride, 172, N-2,4-Dinitrophenyl deriv., 67
45	2,6-Dimethylpiperidine	127-8		1.4366 ²⁵	0.816 ₄ ²⁵		111	50			162.4	Chloroplatinate, 212
46	<i>n</i> -Hexylamine	130	-19		0.763 ₄ ²⁵		40	96		77	126	
47	3-Amino- <i>n</i> -hexane	130										Hydrochloride, 227, Chloroplatinate, 190.200
48	Morpholine	130					75	118	147	136	146	
49	Cyclohexylamine	134		1.4372 ²⁰	0.8191 ₄ ²⁰	101	149	89		148		
50	Trimethylenediamine (1,3-Diaminopropane, 1,3-Propylenediamine)	136			0.884 ₄ ²⁵	1.3- <i>di</i> , 126, 107	1.3- <i>di</i> , 140, 147	96	148		250	Chloroplatinate, 240
51	2,2,6-Trimethylpiperidine	138.9									195.6	Hydrochloride, 236, Chloroaurate, 128
52	Di-isobutylamine	139	-77	1.4093 ²⁰	0.745 ₄ ²⁰	86		55, 57		113	121	
53	4-Amino- <i>n</i> -heptane	139.40			0.767 ₄ ²⁰							Hydrochloride, 246-7, Chloroplatinate, 235
54	1,3-Diaminobutane	141.2									240-5	Hydrochloride, 171.2
55	2-Amino- <i>n</i> -heptane	142		1.4199 ¹⁹	0.7665 ₄ ¹⁹							Hydrochloride, 133, Oxalate, 204-5, Chloroaurate, 63.4
56	<i>unsym</i> -Diethylethylenediamine	145			0.827 ₁₉ ¹⁹					115 (<i>mono</i>), 211 (<i>di</i>)		Chloroaurate, 63.4, Chloroplatinate, 211
57	Furfurylamine (α -Furylmethylamine)	145.6									150	Oxalate, 145, With CO ₂ from air \rightarrow comp., 75, Hydrochloride, 110

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No	Name	Boiling point, °C	Melting point, °C	n_D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> -Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
58	Cyclohexyl methyl amine	145.7					85-6				170	Hydrochloride, 193
59	2-Ethylpiperidine (α -Ethylpiperidine)	146.7			0.8651 ₀			64-5			133	Hydrochloride, 181, Chloroplatinate, 202
60	2,2,4-Trimethylpiperidine	148			0.832 ¹⁵							Chloroplatinate, 215, Methiodide, 266
61	Sym-Diethylethylenediamine	149.50										Hydrochloride, 260, Chloroplatinate, 223, Chloraurate, 220
62	4-Ethylpiperidine (γ -Ethylpiperidine)	151		1.4503 ²⁵	0.876 ⁰			74-5				Chloroplatinate, 173, Chloraurate, 105
63	3-Ethylpiperidine (β -Ethylpiperidine)	153			0.871 ₄ ¹⁶						63	Hydrochloride, 141, Chloroplatinate, 183
64	<i>n</i> -Heptylamine	155	-23	1.41954 ²⁶ _{α}	0.777 ²⁰					75	121	1-Naphthylthiourea, 68.9
65	Di- <i>n</i> -butylamine	159								86	59	1-Naphthylthiourea, 123
66	Tetramethylenediamine (1,4-Diaminobutane, Putrescine)	159	27		0.877 ₄ ²⁵	137 (di)	177 (di)		224 (di)		249-50 (di)	
67	DL-2-Hydroxy- <i>n</i> -propylamine (Isopropanolamine)	163			0.973 ¹⁸						142	Chloroplatinate, 195, Hydrochloride, 73
68	Hexahydrobenzylamine	163.5		1.4646 ¹⁸	0.87 ₄ ²⁰		98, 107				184.6	Hydrochloride, 254
69	Cyclohexyl ethyl amine	164			0.868 ₀						133	Hydrochloride, 184
70	2-Ethylcyclohexylamine	170.1		1.4682 ²⁰	0.8744 ₄ ²⁰			121-2			190	Chloroplatinate, 239
71	2-Aminoethyl alcohol (Ethanolamine)	171		1.4539 ²⁰	1.022 ₄ ²⁰						160	1-Naphthylurea, 186
72	3-Amino-2-hydroxypentane	172			0.906 ¹⁸							N-Chloroacetyl deriv., 52.60, Monooxalate, 166, Dioxalate, 204
73	2-Aminopropyl alcohol	173-6										Hydrochloride, 86, Chloroplatinate, 198.9
74	2-Amino-3-hydroxypentane	174		1.4458	0.9289 ²⁴							Chloroplatinate, 154, Picronate, 215
75	2-Fluoroaniline	176	-35 -29			80	113					Picrate of N,N-dimethyl deriv., 131
76	Pentamethylenediamine (1,5-Diaminopentane, Cadaverine)	178.80			0.9174 ₀		135 (di)	119		148	237	
77	<i>n</i> -Octylamine	180			0.777 ²⁰							1-Naphthylthiourea, 72
78	5-Methyl-2-pyrazoline	180					156				126	Phenylurea, 127
79	Benzyl methyl amine	181			0.945 ₁₅ ¹⁸			95			117-8	Chloroplatinate, 197
80	Aniline	184		1.5863 ²⁰	1.022 ₄ ²⁰	114	160	112	103	54	180	
81	Benzylamine	184-5		1.5401	0.9826 ₄ ¹⁹	65	105	88	116, 185	156	194	
82	4-Fluoroaniline	186	-1	1.5195 ²⁰	1.1725 ₀ ²⁰	152	185					N-4-Nitrobenzoyl deriv., 181
83	DL- α -Phenylethylamine (α -Aminoethylbenzene)	187, 185			0.9395 ¹⁵	57	120					Hydrochloride, 158
84	1,2-Diaminocyclohexane	187				260 (di)					210.5 (di)	Hydrochloride, 280
85	3-Fluoroaniline	187-8, yel			1.160 ¹⁶	84						
86	Di-isoamylamine	187-8	-44	1.4229 ²¹	0.7672 ₄ ¹					72	94.5	1-Naphthylurea, 95, Methiodide, 221
87	3-Aminopropyl alcohol	188		1.457 ²⁶	0.982 ₄ ²⁶						222	Chloroplatinate, 199

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88	1,2,3-Triaminopropane	190				200-2 (<i>tri</i>)	217-8 (<i>tri</i>)				>269	
89	4-Amino-2,6-dimethylpiperidine	195									220	Chloroplatinate, >250
90	N-Methylaniline	196		1.573 ¹⁶	0.989 ²⁰ ₄	102	63	79	94	87	145	
91	1-Phenylisopropylamine	196-7		1.5181 ²⁵	0.9424 ²⁰ ₀		159					Oxalate, 131, Hydrochloride, 236
92	β -Phenylethylamine (β -Aminoethylbenzene)	198			0.958 ²⁴ ₇	51	116	69		135	174, 167	
93	Benzyl ethyl amine	199			0.935 ¹⁷ ₁₅				50		118	Hydrochloride, 184
94	2-Methylaniline (<i>o</i> -Toluidine)	200		1.5688 ²⁰	1.0053 ²⁰ ₀	110-1	146	124	185.6	136	213	
95	<i>n</i> -Nonylamine	201				34-5	49				111	
96	3-Methylaniline (<i>m</i> -Toluidine)	203		1.5686 ²⁰	0.990 ²⁵ ₂₅	65	125	95	171-2		200	
97	Di- <i>n</i> -amylamine	205								72		2-Naphthylthiourea 126, Hydrochloride, 275
98	DL-2-Phenylisopropylamine	205				64 initially, 93 on standing					143	Hydrochloride 145-7
99	N-Ethylaniline	205		1.5559 ²⁰	0.9625 ²⁰ ₀	54	60		87	89	132, 138	
100	4-Methylpyrazole	207		1.4920 ²⁰ _{He}	1.015 ²⁰						142	1- <i>o</i> -Nitrobenzoyl deriv., 107
101	3-Methylbenzylamine (<i>m</i> -Xylylamine)	207			0.9654 ²⁰ ₀	235-40	150				198, 156	Hydrochloride, 208 Chloroplatinate, 214
102	2-Chloroaniline	209-207		1.5895 ²⁰	1.2125 ²⁰ ₀	87	99	129	193, 105	156	134	
103	N,2-Dimethylaniline (N-Methyl- <i>o</i> -toluidine)	208			0.973 ¹⁵	56	66				90	
104	2-Methylbenzylamine (<i>o</i> -Xylylamine)	208	-20	1.5436 ¹⁹	0.977 ¹⁹ ₀	69	88				215	Chloroplatinate, 220-3
105	4-Methylbenzylamine (<i>p</i> -Xylylamine)	208	13	1.5364 ²⁰	0.952 ²⁰ ₀	107-8	137				204	
106	3-Methylpyrazole	208		1.497 ¹⁶ _{He}	1.020 ¹⁶ ₀	29-30					144	N- <i>o</i> -Nitrobenzoyl deriv., 120
107	1-Phenylpropylamine	208		1.5173 ²⁵	0.9347 ²⁵ ₅		115-6	81				Hydrochloride, 190
108	2-Phenylpropylamine	210					85				182	Hydrochloride, 123-4
109	N,4-Dimethylaniline (N-Methyl <i>p</i> -toluidine)	210				83		67			131	N-Nitroso deriv., 52, Hydrochloride, 119-5
110	2-Ethylaniline	210-11	46-6	1.5584 ²²	0.9810 ²⁰	111	147				194-5	
111	L-Menthylamine	212, 207				145	156			135	215	$[\alpha]_D^{25} -34.2$
112	2,5-Dimethylaniline (<i>p</i> -2-Xyldine)	213-5, pale yellow	14-2	1.5591 ²¹	0.9735 ²⁰	139	140	138	232-3, 119	148	171	
113	1-Phenylisobutylamine	214		1.5123 ²⁰	0.920 ²⁰ ₀						166-8	Oxalate, 120-2, Hydrochloride, 275-7
114	3-Methylpyridazine	215			1.0486 ²⁰ ₀						143-4	
115	2,6-Dimethylaniline (<i>m</i> -2-Xyldine)	215, 218	11-2	1.5610 ²⁰	0.9842 ²⁰	177	168		212	204	180	
116	4-Ethylaniline	216, 214	-6	1.5550 ²⁰	0.9690 ²⁰	94	151		104			
117	2,4-Dimethylaniline (<i>m</i> -4-Xyldine)	217		1.561 ²⁰	0.9783 ²⁰ ₀	133, 130	192	130	181	152	209	
118	2-Chloro-N-methylaniline	218			1.1735 ¹¹						133	
119	2,4-Dimethylbenzylamine	218-9									223	Hydrochloride, 212, Chloroplatinate, 226

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120	2-Amino-N,N-dimethylaniline	219				72	51				138 40	
121	3,5-Dimethylaniline (<i>m</i> -5-Xylidine)	220	9 8	1 5581 ²⁰	0 9706 ²⁰	144, 140	144-5			153	200	N-Formyl deriv , 76
122	N-Ethyl-3-methylaniline (N-Ethyl- <i>m</i> -toluidine)	221, 215					72					Hydrochloride, 159, Chloroplatinate, 182
123	3,5-Dimethylbenzylamine	221		1 5305 ²⁰	0 9508 ²⁰						225	Hydrochloride, 245, Chloroplatinate, 204
124	2,3-Dimethylaniline (<i>o</i> -3-Xylidine)	221-2	3 5	1 5684 ²⁰	0 9931 ²⁰	135	189				221	Hydrochloride, 254, N-Formyl deriv , 102
125	1-Aminoindane (1-Hydrindamine)	222					142 3				207	
126	3-Phenylpropylamine	222			0 9763 ²⁵		57 8				152 3	Hydrochloride, 218
127	2-Methyl-4,5,6,7-tetrahydroindole	222			0 9871 ¹⁰			86-91			141	Methiodide 195, Chloroplatinate, 187
128	<i>N</i> - <i>n</i> -Propylaniline	222			0 9491 ¹⁸	47		54		104		
129	2- <i>n</i> -Propylaniline	222-4				104-5	119				151	Hydrochloride, 173
130	2-Chloro-4-methylaniline	223				113	137					
131	α -Amino- <i>n</i> -butylbenzene	223			0 9367 ²⁰		128					Chloroplatinate, 184, Hydrochloride, 288
132	<i>trans</i> -9-Aminodecalin	223	-25	1 4922 ²⁰ _{He}	0 9393 ²⁰	183	148 9					N-Formyl deriv , 172
133	γ -Amino- <i>n</i> -butylbenzene	223		1 5152 ²⁰	0 9289 ¹⁵		108, lgr					Hydrochloride, 144, Chloroplatinate, 220
134	2-Methoxyaniline (<i>o</i> -Anisidine)	225	5-6			85, 88	60, 84	89	127	136	200	N-Formyl deriv , 84
135	4-Isopropylaniline (<i>p</i> -Cumidine)	225			0 9533 ²⁰	102	162					
136	4- <i>n</i> -Propylaniline	225				93-4	115					Hydrochloride, 203 4
137	<i>N</i> -Isobutylaniline	227			0 9401 ¹⁸				122 3			
138	α -Methyl- α -phenylhydrazine	227		1 5824 ²⁰		92	153	132				
139	4- <i>tert</i> -Butylaniline	228	17			173	140		179-80			N-Formyl deriv , 59 Hydrochloride, 270-4
140	<i>cis</i> -9-Aminodecalin	228	-13 5	1 4982 ²⁰ _{He}	0 9511 ²¹	127	147					N-Formyl deriv , 165-6
141	2-Ethoxyaniline (<i>o</i> -Phenetidine)	229				79	104	102	164	137		
142	2,4,6-Trimethylaniline (Mesidine)	229, 232				216	204	137	167	193	189-91	
143	2-Aminoindane (2-Hydrindamine)	230				127	155				239	Hydrochloride, 241
144	3-Chloroaniline	230 236		1 5931 ²⁰	1 2225 ¹⁵	72, 78	119-20	121	138, 210	124, 116	177	
145	2,2'-Diaminodiethylsulfide	231 3									212	Dihydrochloride, 131
146	1,2,3,4-Tetrahydroisoquinoline	233		1 5798 ²³	1 0643 ²³	46	129	154			200, 195	
147	2- <i>tert</i> -Butylaniline	233-5		1 5453 ²⁰	0 9771 ¹⁵	159-61						
148	3-Amino-4-(dimethylamino)toluene	234									151	Hydrochloride, 192 3
149	4-Isobutylaniline	235, pale				127			136-7			
150	4-Aminoindane (4-Hydrindamine)	236	-3			126	136					
151	2-Aminoundecane (2-Aminohendecane, <i>sec</i> - <i>n</i> -Undecylamine)	237				58					111	Hydrochloride, 84
152	<i>unsym</i> -Ethylphenylhydrazine	237			1 0181 ¹⁵							Hydrochloride, 137, Reduces warm Fehling

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No	Name	Boiling point °C	Melting point °C	n_D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> -Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
153	<i>sym</i> -Ethylphenylhydrazine	238.9		1.55 ¹⁵	1.004 ¹⁵		100					Hydrochloride, 164, Oxalate, 167
154	2-Bromo-4-methylaniline (3-Bromo- <i>p</i> -toluidine)	240	26		1.51 ²⁰	118	149					Hydrochloride, 221
155	1-Aminoundecane (1-Aminohendecane, <i>n</i> -Undecylamine, <i>n</i> -Hendecylamine)	240	15-6			48	60					Hydrochloride, 190
156	4-Chloro- <i>N</i> -methylaniline	240			1.169 ^{11.5}	92-4					153	Nitrosamine, 51
157	4-Chloro-2-methylaniline (5-Chloro- <i>o</i> -toluidine)	241	29			140						
158	2-Amino- <i>p</i> -cymene (<i>p</i> -Cymidine)	241		1.543 ¹⁹	0.994 ²⁰	71	102					Hydrochloride, 207
159	<i>N</i> -Butylaniline	241		1.5381 ²⁰	0.9358 ²⁰		56		56			
160	Phenylhydrazine	243	19-23	1.6081 ²⁰	1.0978 ²⁰	128	168, 177 (<i>di</i>)	148	151	172		
✓ 161	α, α' -Diamino- <i>m</i> -xylene (<i>m</i> -Xylylenediamine)	245.8				<i>di</i> 134.5, <i>bz</i> 123	<i>N, N'</i> - <i>di</i> 172				185-90	Dihydrobromide, 266
162	2-Chloro-6-methoxyaniline (3-Chloro- <i>o</i> -anisidine)	246 sl d					135					
163	3-Ethoxyaniline (<i>m</i> -Phenetidine)	248				97	103		157	138	158	
164	4-Ethoxyaniline (<i>p</i> -Phenetidine)	248, 254	2-3		1.065 ¹⁶	137	173	143	106	136	69	
165	1,2,3,4-Tetrahydroquinoline	250	20	1.593 ²⁴	1.054 ²⁴		75	67				
166	2-Aminoacetophenone	250.2d	20			76.7	98		148			Semicarbazone, 290, Oxime, 109, Hydrochloride, 168 d
167	3-Bromoaniline	251	18	1.626 ²⁰	1.579 ²⁰	87	120-136			143	180	
168	3-Methoxyaniline (<i>m</i> -Anisidine)	251				81			68		169	Hydrochloride, 167.8
169	3-Bromo-2-methylaniline (6-Bromo- <i>o</i> -toluidine)	254				163	176-7					
✓ 170	4-Amino-1,2,3,5-tetramethylbenzene (Isoduridine)	255	23-4			215-7					200	
✓ 171	Dicyclohexylamine	255 sl d	abt 20	1.488 ¹⁸	0.925 ¹⁸	103	153				173	
172	6-Methyl-1,2,3,4-tetrahydroisoquinoline	256			1.0235 ⁴						205	Hydrochloride, 195-7, Methiodide, 144.5, <i>N</i> -Nitroso deriv., 98
✓ 173	4-Amino- <i>N, N</i> -diethylaniline	261				104	172					
✓ 174	4- <i>n</i> -Butylaniline	261			0.945 ²⁰	105	126					Chloroplatinate, 200-2
175	1-Amino-5,6,7,8-tetrahydronaphthalene	261.3		1.5896 ²³	1.0625 ¹⁶	158						Hydrochloride, 259.61
176	7-Methyl-1,2,3,4-tetrahydroquinoline	264					70-2				153-4	Hydrochloride, 175
177	4-Methylindole	267	5		1.062 ²⁰						194.5	
178	2-Amino-4-chloro- <i>N, N</i> -dimethylaniline	267.8				90					191	
179	DL-3-Aminopropylenglycol (2,3-Dihydroxypropylamine)	268 part d		1.49 ¹⁰	1.175 ²⁰		<i>O, N</i> - <i>di</i> 109 <i>O, O, N</i> - <i>tri</i> 113					Chloroplatinate, 185, Picrolonate, 220, <i>O, N</i> - <i>di</i> -4-Nitrobenzoyl deriv., 139

* Derivative data given in order m.p., crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES

1. Primary and secondary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)* (Continued)

No	Name	Boiling point, °C	Melting point °C	n_D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> -Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
180	Diethanolamine (Di-(2-hydroxyethyl)-amine)	270	28	1.4776 ⁴⁰	1.0966 ⁴⁰						110	Nitrate, 69, Chloroplatinate, 160
181	3-(Dimethylamino) aniline	272			0.995 ⁴⁵	87.69 (<i>di</i>)	163.4				187	N-Chloroacetyl deriv., 102
182	1-(N,N-Diethylamino) naphthalene	290		1.5961 ⁴⁰	1.015 ⁴⁰						152.4	1,3,5-Trinitrobenzene add comp., 95, scar
183	1-(Methylamino) naphthalene	294				94.5	121		164			
184	Dibenzylamine	300		1.5743 ⁴²	1.0256 ⁴²		112	68	159			Hydrochloride, 256
185	α -Aminodiphenylmethane (Benzhydrylamine)	303-4		1.5963 ^{41, 5}	1.0635 ^{41, 5}	146.7	172.167				205.6	N-Formyl deriv., 132
186	1,2-Diphenylethylamine	313			1.031 ⁴⁵						212.3	Oxalate, 158, Chloroplatinate, 188
187	2,3-Diphenylpropylamine	315.7				85 (<i>di</i>)						Hydrochloride, 188.90, Chloroaurate, 144.5
188	2-(Methylamino) naphthalene	317, 309				51	84	107	78		145	Hydrochloride, 182.3
189	2-(N,N-Diethylamino) naphthalene	320.2										1,3,5-Trinitrobenzene add comp., 116, blk., Hydrochloride, 177, Chloroplatinate, 95

*Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
1. Primary and secondary amines a) Liquids 2) (b.p. at reduced pressure only)
(Listed in order of increasing m.p. of the corresponding acetyl derivative)*

No	Name	Boiling point, °C	Melting point, °C	n _D	Density g/ml	Acetamide	Benzamide	Benzene sulfonamide	<i>p</i> -Toluene sulfonamide	Phenyl thiourea	Picrate	Miscellaneous
1	3-Aminostyrene	112 5 ¹²			1 0216 ²⁰ ₂₀	74 5						Polymerizes readily
2	2-Bromo-4-ethoxyaniline (3-Bromo- <i>p</i> -phenetidine)	160 ²³				97						
3	3-Aminothiophenol	180-90 ¹⁶				<i>N,S-di</i> 97 <i>di</i>)						Hydrochloride, 232
4	2- <i>n</i> -Butylaniline	122 5 ¹²			0 953 ²⁰	100	116 7					Hydrochloride, 137
5	2-(2-Aminophenyl)ethyl alcohol	147 8 ^{3 5}		1 5849 ¹⁹		103 5						Hydrochloride, 126
6	6-Amino-3,4'-dimethylbiphenyl	165 7 ⁴				104						Hydrochloride, 216-26
7	2,2-Diphenylpropylamine	179-82 ²²			1 027 ¹⁸	106 7	82-3					Hydrochloride, 261
8	2-Chloro-4-methoxyaniline (3-Chloro- <i>p</i> -anisidine)	156 ³¹				114						Hydrochloride, 228
9	2-Aminostyrene	97 8 ⁸		1 6130 ²¹	1 015 ²¹	129						Polymerizes readily
10	2-Aminothiophene	77 9 ¹¹				161 2	172-3					Oxidizes rapidly, N-2-toluenesulfonyl deriv, 183 4
11	4,4'-Diamino-2,3'-dimethylbiphenyl	244 ¹²				<i>N,N'-di</i> 253, <i>tetra</i> 191	<i>N,N'-di</i> 245					

*Derivative data given in order m p , crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
2. Tertiary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)*

No	Name	Boiling point °C	Melting point, °C	n_D	Density g/ml	Methyl <i>p</i> -toluene sulfonate	Methiodide	Picrate	Chloro platinate	Miscellaneous
1	Trimethylamine	3			0.6709 ⁰		230	216, 225		<i>p</i> -Toluenesulfonate salt, 162
2	Dimethyl ethyl amine	37.5						193		Hydrochloride, 221
3	N-Methylpyrrolidine	78-80						221	233	
4	Triethylamine	89		1.400 ²⁰	0.7255 ⁴⁵			173		2,4-Dinitrobenzoate salt, 81
5	1,2-Dimethylpyrrolidine	96		1.4252 ²⁰	0.7994 ²⁰			235	223	3, β -Resorcylic acid salt, 120
6	1,3-Dimethylpyrrolidine	96-7			0.7921 ⁵			dimorphous, 181 or 110-5	58.9	HgCl ₂ add comp., 200
7	Pyridine	116		1.5092 ²¹	0.9782 ²⁵	139	117	167	241, 262.4	<i>p</i> -Toluenesulfonate salt, 160, Ethiodide, 91
8	1,2,5-Trimethylpyrrolidine	116		1.4335 ^{9, 2}	0.815 ⁴		310	163		
9	2-Dimethylaminoethyl ether	121		1.406 ²⁰	0.806 ²⁰		160.5	119-21		
10	Dimethylaminoacetone	123							176, s. h	Oxime, 99
11	1-Methylpyrazole	127		1.4787 ¹⁴ _{He}	0.9931 ¹⁴		190	148	196.8	
12	N-Ethylpiperidine	128		1.4416 ²⁰ _α	0.8237 ²⁰			167.5	202	
13	2-Methylpyridine (α -Picoline)	129		1.503 ¹⁷	0.9497 ¹⁵	150	230	169	216, 195	<i>p</i> -Toluenesulfonate salt, 161, Ethiodide, 123
14	β -Dimethylaminoethyl alcohol (2-Dimethylaminoethyl alcohol)	135		1.43 ²⁰	0.8866 ²⁰			96.7		
15	1,3-Dimethylpyrazole	136		1.467 ¹⁵ _α	0.9628 ¹⁵		256	138		
16	2-Methylpyrazine	136-7			1.029 ²⁰		129.30	133		
17	4-Methylpyrimidine	141.2			1.031 ¹⁸			131.4		HgCl ₂ double salt, 198
18	2,6-Dimethylpyridine (2,6-Lutidine)	142.3					233	168	208	
19	3-Methylpyridine (β -Picoline)	143		1.504 ²⁴	0.9515 ²⁵			150	202	Styphnate, 154, Oxid → nicotinic acid, 228
20	4-Methylpyridine (γ -Picoline)	143		1.506 ¹⁹	0.957 ¹⁵			167	231	β -Resorcylic acid salt, 125
21	4-Chloropyridine	147.8							202	
22	2-Ethylpyridine	149			0.9371 ¹⁷			187.9	165.7	
23	3-Chloropyridine	149						135	168	
24	Tri- <i>n</i> -propylamine	156.5		1.4176 ²⁰	0.753 ²⁰		207.8	116		Ethiodide, 238
25	2,4-Dimethylpyridine (2,4-Lutidine)	157, 159		1.503 ¹⁴	0.9273 ²⁵			183	216	β -Resorcylic acid salt, 143
26	2,5-Dimethylpyridine (2,5-Lutidine)	160						169	192.4	
27	1,3,4-Trimethylpyrazole	160		1.4866 ¹⁸ _{He}	0.956 ¹⁸			164		
28	3-Ethylpyridine	162-4			0.954 ⁰			128-30	208-9, 196	
29	β -Diethylaminoethyl alcohol (2-Diethylaminoethyl alcohol)	163		1.440 ²⁵	0.8601 ²⁵ ₂₅					4-Nitrophenylurethane, 60
30	Tropidine (2-Tropene)	163		1.4884 ¹⁹ _α	0.953 ²⁰		abt 300	285	217	
31	2,3-Dimethylpyridine (2,3-Lutidine)	164						188	195	
32	3,4-Dimethylpyridine (3,4-Lutidine)	164						163	205	
33	4-Ethylpyridine	164-5			0.9417 ²⁰			168	213	
34	2,4,5-Triethylpyridine (2,4,5-Collidine)	165-8						128-31	205	
35	1,4-Bis-dimethylaminobutane	167						199		
36	Tropane	167			0.931 ²⁰		> 300	281	230	
37	1-Diethylaminoisopropyl alcohol	167.72			0.8511 ²⁰			89		
38	2-Chloropyridine	170, 166			1.205 ¹⁵	120				
39	3-Bromopyridine	170		1.5694 ²⁰	1.645 ⁹	156	165		175	
40	3,5-Dimethylpyridine (3,5-Lutidine)	170-1						245	255	

*Derivative data given in order. m. p., crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
2. Tertiary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)* (Continued)

No	Name	Boiling point, °C	Melting point, °C	n _D	Density g/ml	Methyl <i>p</i> -toluene sulfonate	Methiodide	Picrate	Chloro platinate	Miscellaneous
41	2,4,6-Trimethylpyridine (2,4,6-Collidine)	172			0.917 ²⁰			156	223	
42	1,4,5-Triethylpyrazole	176-7		1.4848 ¹⁸ _{He}	0.9685 ¹⁸			175.6		
43	2,3,6-Trimethylpyridine (2,3,6-Collidine)	176.8						146	250.2	
44	Benzyl dimethyl amine	181						93	192	Picrolonate, 151
45	2,3,5-Trimethylpyridine (2,3,5-Collidine)	184						183, 179	227.8	
46	N,N,2-Trimethylaniline (N,N-Dimethyl <i>o</i> -toluidine)	185		1.515 ²⁰	0.9286 ²⁰			122, 116		1,3,5-Trinitrobenzene add comp., 113
47	2,6-Dimethyl-4-ethylpyridine	186			0.916 ¹⁴			119-20	210	
48	2,4-Diethylpyridine	187-8			0.9338 ⁰			98.100	170-1	
49	3-Diethylaminopropyl alcohol	190					175			
50	Methyl 2-pyridyl ketone	192					161	131	220	Oxime, 121 Phenylhydrazone, 155, Ethiodide, 205
51	2,3,4-Trimethylpyridine (2,3,4-Collidine)	192-3			0.912 ¹⁵			163.4	259	
52	N,N-Dimethylaniline	193	22.5	1.5582 ²⁰	0.9557 ²⁰	161	228, 220	163	173	<i>p</i> -Toluenesulfonate salt, 133, 3,5-Dinitrobenzoate salt, 115
53	2-Bromopyridine	194			1.657 ¹⁵	127				
54	3-Ethyl-4-methylpyridine	195.6			0.9656 ⁰			148.50	234, 205	
55	3,5-Dimethyl-2-ethylpyridine	198						152	189	
56	N,N,2,6-Tetramethylaniline (N,N-Dimethyl- <i>m</i> -2-xylylidine 2-Dimethylamino- <i>m</i> -xylene)	199-200		1.513 ²⁰	0.912 ²⁰					1,3,5-Trinitrobenzene add comp., 108
57	N-Ethyl-N-methylaniline	201			0.919 ⁵⁵		125	134.5		Hydrochloride, 114
58	N,N,2,5-Tetramethylaniline (N,N-Dimethyl- <i>p</i> -2-xylylidine, 2-Dimethylamino- <i>p</i> -xylene)	204						158	196	
59	N,N,2,4-Tetramethylaniline (N,N-Dimethyl- <i>m</i> -4-xylylidine, 4-Dimethylamino- <i>m</i> -xylene)	205		1.5201 ²⁰	0.9164 ²⁰			123.4	219	1,3,5-Trinitrobenzene add comp., 114
60	N,N-Diethyl-2-methylaniline (N,N-Diethyl- <i>o</i> -toluidine)	206, 210					224	180		
61	2-Chloro-N,N-dimethylaniline	207					152	132		
62	N,N,4-Trimethylaniline (N,N-Dimethyl- <i>p</i> -toluidine)	210		1.536 ²⁰	0.929 ²⁰	85	219	129		1,3,5-Trinitrobenzene add comp., 124, vlt
63	3,4-Diethylpyridine	211						139	221	
64	Tri- <i>n</i> -butylamine	211, 216			0.778 ²⁰ ₂₀		180	106		β -Resorcylic acid salt, 121
65	N,N,3-Trimethylaniline (N,N-Dimethyl- <i>m</i> -toluidine)	212		1.5492 ²⁰	0.941 ²⁰		177			
66	Methyl 4-pyridyl ketone	212-4						130	205	Oxime, 142, Phenylhydrazone, 150, HgCl ₂ double salt, 183-4
67	N,N-Diethylaniline	218, 216			0.9351 ²⁰		102	142		
68	Methyl 3-pyridyl ketone	220								Oxime, 133, Phenylhydrazone, 137, HgCl ₂ double salt, 158
69	N,N-Diethyl-4-methylaniline (N,N-Diethyl- <i>p</i> -toluidine)	229			0.924 ¹⁶		184			
70	2,3,4,5-Tetramethylpyridine	232.4						170.2	210	
71	Quinoline	239	-15.6	1.6268 ²⁰	1.0929 ²⁰	126	133	203	227, 218	<i>p</i> -Toluenesulfonate salt, 155, Ethiodide, 159, Styphnate, 207.8
72	Isoquinoline	243	26, 24	1.615 ²⁰ , 1.622 ²⁵	1.0986 ²⁰	163	159	222	263	Ethiodide, 148

*Derivative data given in order m.p., crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
2. Tertiary amines a) Liquids 1) (Listed in order of increasing atmospheric b.p.)* (Continued)

No	Name	Boiling point, °C	Melting point, °C	n_D	Density g/ml	Methyl <i>p</i> -toluene sulfonate	Methiodide	Picrate	Chloro platinate	Miscellaneous
73	DL-Nicotine (DL-1-Methyl-2-(3-pyridyl)-pyrrolidine)	243			1 008 ₄ ²⁰		219	218	abt 280	
74	2-Dimethylaminobenzaldehyde	244, yel					164		205 6	Oxime, 87, <i>p</i> -Nitrophenylhydrazone, 191
75	Tri-isoamylamine	245, 237			0 786 ₄ ²⁰			125		
76	N,N-Dipropylaniline	245			0 9104 ²⁰		156	261		
77	2-Ethylquinoline (α -Ethylquinoline)	245-6		1 598 ²³	1 050 ¹⁷		180	148	188	
78	2-Methylquinoxaline	245-7						215	>250	
79	1-Methylindole	247, 239			1 0707 ⁰			150		
80	2-Methylquinoline (Quinaldine)	247		1 6126 ²⁰	1 0585 ₂ ²⁰	161, 134	195	191, 195	228	β -Resorcylic acid salt, 145 Ethiodide, 233
81	8-Methylquinoline	248		1 616 ²⁰	1 072 ₁ ²¹			200		
82	L-Nicotine (L-1-Methyl-2-(3-pyridyl)-pyrrolidine)	248		1 528 ²⁰	1 0097 ₄ ²⁰			218	275	$[\alpha]_D^{20}$ - 167-8
83	1-Ethylisoquinoline	250						207 10	200	
84	2,4-Dimethyl-5,6,7,8-tetrahydroquinoline	250	20	1 5415 ²⁰	1 0043 ₄ ²⁰		157	144		Hydrochloride, 195
86	N-Methyl-2-pyridone	255						145	141	Styphnate, 162
87	4,6-Dimethylquinoline	255 6, 280						236-7	238	
88	3-Ethylisoquinoline	257						171 2	180	
89	Tri-<i>n</i>-amylamine (Tri- <i>n</i> -pentylamine)	257, 245				80				
90	3-Methylquinoline (β -Methylquinoline)	257 9	16 7	1 6171 ²⁰	1 0673 ₂ ²⁰		221	187	249	Ethiodide 220
91	6-Methylquinoline	258		1 6157 ²⁰	1 0654 ₂ ²⁰	154	219, 216	229		
92	3-Chloroquinoline (β -Chloroquinoline)	258 60					276 subl	182	>300	
93	3-Bromo-N,N-dimethylaniline	259	11					135		
94	5-Methylquinoline	260					105	210 3		
95	4-Methylquinoline (γ -Methylquinoline)	261-3			1 0862 ²⁰		173 4	210-1	226 30	Ethiodide, 141 3
96	2,4-Dimethylquinoline	264-5			1 061 ¹⁵		263 5	193-4	229	Ethiodide, 214
97	2-Phenylpyridine	268-9						175	204	
98	6,8-Dimethylquinoline	269			1 066 ⁴			288-9	235	
99	N,N-Di-<i>n</i>-butylaniline	271				180		125		
100	4-Ethylquinoline (γ -Ethylquinoline)	272-4					149	178-80	204	
101	N,N-Dimethyl-1-aminonaphthalene (N,N-Dimethyl- α -naphthylamine)	273		1 624 ¹⁵	1 0446 ₁₃ ¹⁵			145		1,3,5-Trinitrobenzene add comp, 105 7
102	5,8-Dimethylquinoline	273 5	4 5		1 072 ²¹			198	234	
103	3-Bromoquinoline (β -Bromoquinoline)	274 6	12					190		Oxalate, 107
104	3,5-Dimethyl-1-phenylpyrazole	275					190	103	186	
105	6-Bromoquinoline	278	19, 24				278	217		
106	2,4,7-Trimethylquinoline	280-1		1 5973 ²⁴	1 0337 ²⁰		322	232	272	
107	4,7-Dimethylquinoline	283						224	227	
108	3,4-Dimethyl-1-phenylpyrazole	285		1 5724 ²⁰	1 0574 ₄ ²⁰			122 5	180	
109	8-Chloroquinoline	288					165		235	
110	2,3'-Bipyridyl	289, 298						150, <i>dt</i> 165-8		
111	8-Bromoquinoline	302-4					281		230	
112	6-Methoxyquinoline	305d	20, 28				236	305		
113	N-Benzyl-N-methylaniline	306		1 601 ³⁰	1 0422 ₂₆ ²⁶		164	127		

*Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE XVIII. ORGANIC DERIVATIVES OF AMINES
2. Tertiary amines a) Liquids (b.p. at reduced pressure only)
2) (Listed in order of increasing m.p. of the corresponding picrate derivative)*

No	Name	Boiling point, °C	Melting point, °C	n _D	Density g/ml	Methyl <i>p</i> -toluene sulfonate	Metho dide	Picrate	Chloro-platinate	Miscellaneous
1	N,N-Dimethyl-2-nitroaniline	151 3 ³⁰⁻³ , or -yel		1 6102				102 3		Hydrochloride, 174, 1,3,5-Trinitrobenzene add comp, 112
2	2,6-Diethylpyridine	71 3 ¹⁷					142	115	211 2	
3	2-Iodopyridine (α-Iodopyridine)	93 ¹³		1 6366 ²⁰	1 9735 ⁶⁰		207	120	210	
4	1,3-Dimethyl-1,2,3,4-tetrahydroquinoline	130 2 ¹⁷					204	131		
5	β,β-Diethylphenylhydrazine	110 2 ¹⁴						131		Reduces Fehling's and Tollen's reagent Zn + AcOH → aniline, b p 184 + diethylamine b p 56
6	3-Dimethylaminobenzaldehyde	138°, yel					185 6	147	168 r h	Oxime, 75-6, Semicarbazone, 229 <i>p</i> -Nitrophenylhydrazone, 188
7	4-Methyl-5,6,7,8-tetrahydroquinoline	122 ¹¹					183	170		Hydrochloride, 203
8	3-Methyl-5,6,7,8-tetrahydroquinoline	126 7 ¹⁷					162	171	219	
9	3-Ethylquinoline (β-Ethylquinoline)	135 8 ¹²		1 603 ¹⁸	1 0508 ²⁰		191	197		Hydrochloride, 173
10	4-Bromopyridine (γ-Bromopyridine)	27 5 30 ^{0 3-0 5}	0-1	1 5679 ²⁰				223		Decomposes to yel -br solid on standing

*Derivative data given in order m p , crystal color, solvent from which crystallized