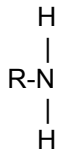
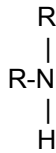


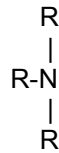
Amine, Ammoniumverbindungen



primäres Amin



sekundäres Amin



tertiäres Amin

Die Bezeichnungen primär, sekundär und tertiär beziehen sich auf das N-Atom, so ist z.B. tert. Butylamin ein primäres Amin. Die Alkylreste (R-) können bei den sekundären und tertiären Aminen gleich oder verschieden sein.

1 Aliphatische und araliphatische Amine

1.1 Primäre Amine

Methanamin	CH_3NH_2	<i>Methylamin</i>	F.-92°C, Kp.-6,5°C
Ethanamin	$\text{CH}_3\text{-CH}_2\text{NH}_2$	<i>Äthylamin</i>	F.-80,6°C, Kp. 16,6°C, D.0,689
Propan-1-amin	$\text{CH}_3\text{-(CH}_2\text{)}_2\text{NH}_2$	<i>n-Propylamin</i>	F.-83°C, Kp. 47,8°C, D.0,719
Propan-2-amin	$\text{CH}_3\text{-CH(NH}_2\text{)-CH}_3$	<i>iso-Propylamin</i>	F.-101°C, Kp.33°C, D.0,694(14°C)
Prop-2-en-1-amin	$\text{CH}_2\text{=CH-CH}_2\text{-NH}_2$	<i>Allylamin</i>	Kp.53°C, D. 0,763
Butanamin	$\text{CH}_3\text{-(CH}_2\text{)}_3\text{-NH}_2$	<i>n-Butylamin</i>	F.-50,5°C, Kp. 77,8°C, D.0,742(15°C)
2-Methyl-butanamin	$\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2\text{-NH}_2$	<i>iso-Butylamin</i>	F.-85,5°C, Kp.68°C, D.0,736
1,1-Dimethylethanamin	$\text{CH}_3\text{-C(CH}_3\text{)}_2\text{-NH}_2$	<i>tert-Butylamin</i>	F.-67,5°C, Kp.45,2°C, D.0,698(15°C)
Pentanamin	$\text{CH}_3\text{-(CH}_2\text{)}_4\text{-NH}_2$	<i>n-Amylamin</i>	F.-55°C, Kp.103°C, D.0,766
1,1,-Dimethylpropanamin	$\text{CH}_3\text{-CH}_2\text{-C(CH}_3\text{)}_2\text{-NH}_2$	<i>tert-Amylamin</i>	F.105°C, Kp.77°C, D.0,748
Hexanamin	$\text{CH}_3\text{-(CH}_2\text{)}_5\text{-NH}_2$	<i>n-Hexylamin</i>	
4-Methylpentanamin	$\text{CH}_3\text{-CH(CH}_3\text{)-(CH}_2\text{)}_3\text{-NH}_2$	<i>iso-Hexylamin</i>	F.-94°C, Kp.123°C
Heptanamin	$\text{CH}_3\text{-(CH}_2\text{)}_6\text{-NH}_2$	<i>n-Heptylamin</i>	F.-23°C, Kp.155°C
2-Amino-3-methylbutan	$\text{CH}_3\text{-CH(CH}_3\text{)-CH(NH}_2\text{)-CH}_3$		F.-50°C, Kp.85°C, D.0,757

1.2 Sekundäre Amine

Dimethanamin	$(\text{CH}_3)_2\text{NH}$	<i>Dimethylamin</i>	F.-96°C, Kp. 7,4°C, D.0,686(6°C)
Diethanamin	$(\text{CH}_3\text{-CH}_2)_2\text{NH}$	<i>Diäthylamin</i>	F.-50°C, Kp. 56,3°C, D.0,711
Dipropanamin	$(\text{CH}_3\text{-CH}_2\text{-CH}_2)_2\text{NH}$	<i>Di-n-Propylamin</i>	F.-63,5°C, Kp. 109°C, D.0,738
Diprop-2-enamin	$(\text{CH}_2\text{=CH-CH}_2)_2\text{NH}$	<i>Diallylamin</i>	F.-100°C, Kp.111°C, D.0,789
Dibutanamin	$[\text{CH}_3\text{-(CH}_2\text{)}_3]_2\text{NH}$	<i>Di-n-butylamin</i>	
Bis(2-methylpropan)amin	$[\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2]_2\text{-NH}$	<i>Di-iso-butylamin</i>	F.-70°C, Kp.139°C, D.0,745
Bis(2-hydroxyethyl)amin	$\text{HO-(CH}_2\text{)}_2\text{-NH-(CH}_2\text{)}_2\text{-OH}$		
Bis(2-chlorethyl)amin	$\text{Cl-(CH}_2\text{)}_2\text{-NH-(CH}_2\text{)}_2\text{-Cl}$	<i>N-Yperit</i>	

1.3 Tertiäre Amine

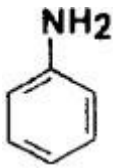
Trimethanamin	$(\text{CH}_3)_3\text{N}$	<i>Trimethylamin</i>	F.-124°C, Kp.-3,5°C, D.0,662(-5°C)
Triethanamin	$(\text{CH}_3\text{-CH}_2)_3\text{N}$	<i>Triäthylamin</i>	F.-115°C, Kp. 89°C, D.0,727
Tripropanamin	$(\text{CH}_3\text{-CH}_2\text{-CH}_2)_3\text{N}$	<i>Tri-n-propylamin</i>	F.-93,5°C, Kp.156°C, D.0,757
Triprop-2-en-1-amin	$(\text{CH}_2=\text{CH-CH}_2)_3\text{N}$	<i>Triallylamin</i>	Kp.150°C, D.0,80
Tributanamin	$[\text{CH}_3\text{-(CH}_2)_3]_3\text{N}$	<i>Tri-n-butylamin</i>	
Tris(2-methylpropan)amin	$[\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2]_3\text{-N}$	<i>Triisobutylamin</i>	F.-25,8°C, Kp.185°C, D.0,770
Tris(2-chlorethyl)amin	$(\text{CH}_2\text{Cl-CH}_2)_3\text{-N}$	<i>Trichlortriethylamin</i>	F.-4°C, Kp.(Z.)180°C
Ethyl-diisopropylamin	$\text{CH}_3\text{-CH}_2\text{-N[CH(CH}_3)_2]_2$	<i>Hünigsche Base</i>	
Bis(2-Chlorethyl)-methylamin	$\text{Cl-(CH}_2)_2\text{-N-(CH}_2)_2\text{-Cl}$ CH_3	<i>Stickstoff-Lost</i>	

2 Aliphatische Di- und Polyamine

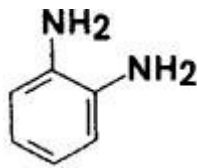
Ethan-1,2-diamin	$\text{H}_2\text{N-CH}_2\text{-CH}_2\text{-NH}_2$	<i>Äthylendiamin</i>	F.8,5°C, Kp.116,5°C
Propan-1,3-diamin	$\text{H}_2\text{N-(CH}_2)_3\text{-NH}_2$		
Butan-1,4-diamin	$\text{H}_2\text{N-(CH}_2)_4\text{-NH}_2$	<i>Putrescin</i>	F.27°C, Kp.159°C
Pentan-1,5-diamin	$\text{H}_2\text{N-(CH}_2)_5\text{-NH}_2$	<i>Cadaverin</i>	Kp.179°C
Hexan-1,6-diamin	$\text{H}_2\text{N-(CH}_2)_6\text{-NH}_2$		F.42°C, Kp.199°C
Heptan-1,7-diamin	$\text{H}_2\text{N-(CH}_2)_7\text{-NH}_2$		Kp.224°C
Octan-1,8-diamin	$\text{H}_2\text{N-(CH}_2)_8\text{-NH}_2$		
Nonan-1,9-diamin	$\text{H}_2\text{N-(CH}_2)_9\text{-NH}_2$		
Decan-1,10-diamin	$\text{H}_2\text{N-(CH}_2)_{10}\text{-NH}_2$		F.58°C
Undecan-1,11-diamin	$\text{H}_2\text{N-(CH}_2)_{11}\text{-NH}_2$		
Dodecan-1,12-diamin	$\text{H}_2\text{N-(CH}_2)_{12}\text{-NH}_2$		F.67°C, Kp.304°C
Dithiooxid	$\text{H}_2\text{N-CS-CS-NH}_2$	<i>Rubeanwasserstoff</i>	
1,8-Diamino-3,6-dioxaocetan	$\text{H}_2\text{N-(CH}_2)_2\text{-O-(CH}_2)_2\text{-O-(CH}_2)_2\text{-NH}_2$	<i>Triäthylenglycoldiamin</i>	

3 Aromatische Amine

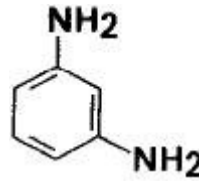
3.1 Primäre Amine (Aniline)



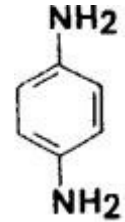
Aminobenzol
Anilin
F. 6,2°C, Kp. 184°C, D. 1,022



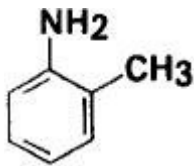
1,2-Diaminobenzol
o-Phenyldiamin
F. 102°C, Kp. 256°C



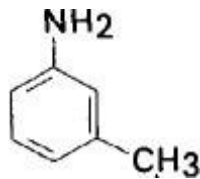
1,3-Diaminobenzol
m-Phenyldiamin
F. 62,8°C, Kp. 282°C



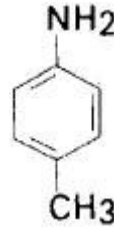
1,4-Diaminobenzol
p-Phenyldiamin
F. 140°C, Kp. 267°C



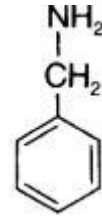
1-Methyl-2-aminobenzol
2-Aminotoluol
o-Toluidin
F. -27,7°C, Kp. 200°C



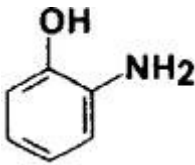
1-Methyl-3-aminobenzol
3-Aminotoluol
m-Toluidin
F. -43,6°C, Kp. 203°C



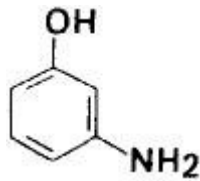
1-Methyl-4-aminobenzol
4-Aminotoluol
p-Toluidin
F. 43,7°C, Kp. 200°C



Aminomethylbenzol
Benzylamin
D. 0,98



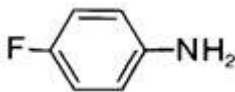
1-Hydroxy-2-aminobenzol
2-Aminophenol
F. 174°C, LW. 17



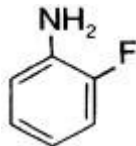
1-Hydroxy-3-aminobenzol
3-Aminophenol
F. 121°C



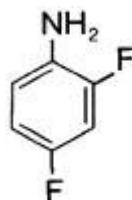
1-Hydroxy-4-aminobenzol
4-Aminophenol
F. 188°C, Z. 284°C, LW. 6



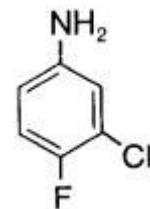
1-Amino-4-fluorbenzol
p-Fluoranilin
F. -2°C, Kp. 187°C



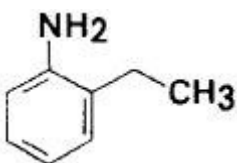
1-Amino-2-fluorbenzol
o-Fluoranilin
F. -29°C, Kp. 183°C, D. 1,151



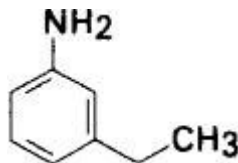
2,4-Diamino-1-amino-benzol
2,4-Difluoranilin
F. -7°C, Kp. 172°C, D. 1,3



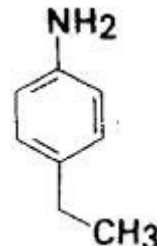
1-Amino-3-chlor-4-fluorbenzol
3-Chlor-4-fluoranilin
F. 43°C, Kp. ~230°C



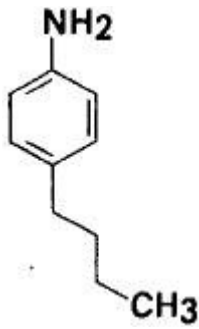
2-Amino-1-ethylbenzol
2-Äthylanilin
F. -46°C, Kp. 210°C, D. 0,983



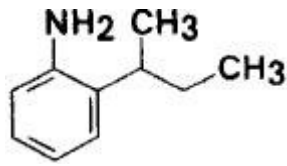
3-Amino-1-ethylbenzol
3-Äthylanilin
F. -8°C, D. 0,972



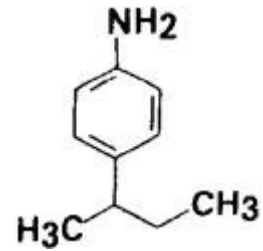
4-Amino-1-ethylbenzol
4-Äthylanilin
F. -5°C, Kp. 216°C, D. 0,968



4-Butylaminobenzen
4-Butylanilin
Kp.249°C, D.0,938

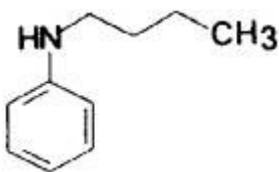


2-(1-Methylpropyl)-aminobenzen
2-sec-Butylanilin
D.0,955

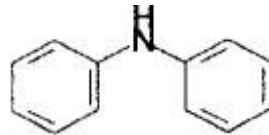


4-(1-Methylpropyl)-aminobenzen
4-sec-Butylanilin
D.0,942

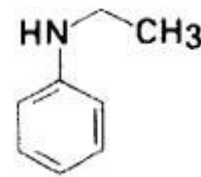
3.2 Sekundäre Amine (Aniline)



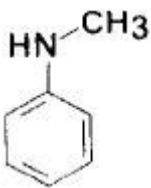
N-Butylaminobenzen
N-Butylanilin
F.-12°C, Kp.241°C, D.0,932



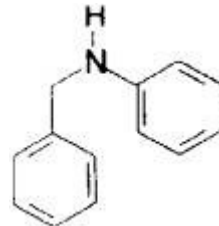
Diphenylamin
N-Phenylanilin
F.52°C, Kp.302°C, LW.0,2



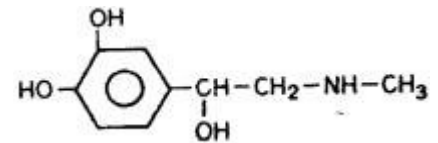
N-Ethylaminobenzen
N-Äthylanilin
F.-64°C, Kp.205°C, LW.50, D.0,960



N-Methylaminobenzen
N-Methylanilin
F.-57°C, Kp.195°C, D.0,985, LW.30

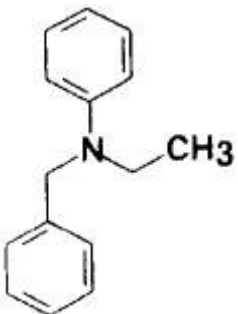


N-Phenylbenzylamin
N-Benzylanilin
F.34°C, Kp.306°C

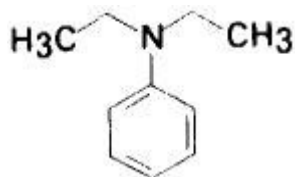


Dihydroxyphenylethanolmethylamin
Adrenalin

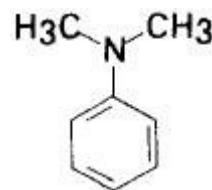
3.3 Tertiäre Amine (Aniline)



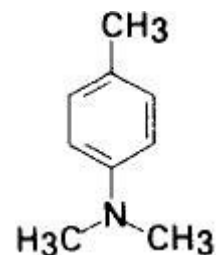
N-Benzyl-N-ethyl-aminobenzen
Kp.312°C, D.1,029



N,N-Diethylaminobenzen
N,N-Diethylanilin
F.-21°C, Kp.216°C, LW.16, D.0,933



N,N-Dimethylaminobenzen
N,N-Dimethylanilin
F.8°C, Kp.193°C, D.0,955



4-Dimethylamino-1-methylbenzen
N,N-Dimethyl-p-toluidin
Kp.215°C, D.0,936

4 Ammoniumverbindungen

Methylammoniumchlorid $\text{H}_3\text{C-NH}_2 \cdot \text{HCl}$ F.229°C

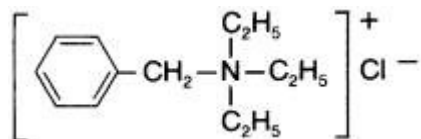
Ethylammoniumchlorid $\text{H}_3\text{C-CH}_2\text{-NH}_2 \cdot \text{HCl}$ Z.270°C

Dimethylammoniumchlorid $\text{H}_3\text{C-NH-CH}_3 \cdot \text{HCl}$ F.173°C

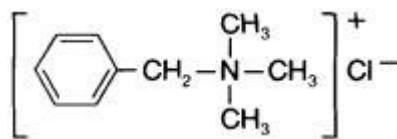
Diethylammoniumchlorid $\text{H}_3\text{C-CH}_2\text{-NH-CH}_2\text{-CH}_3 \cdot \text{HCl}$

Trimethylammoniumchlorid $\text{H}_3\text{C-N-CH}_3 \cdot \text{HCl}$
 $\begin{array}{c} | \\ \text{CH}_3 \end{array}$

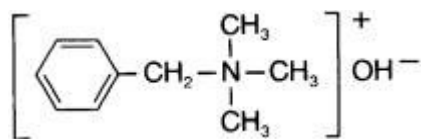
Triethylammoniumchlorid $\text{H}_3\text{C-CH}_2\text{-N-CH}_2\text{-CH}_3 \cdot \text{HCl}$
 $\begin{array}{c} | \\ \text{CH}_2\text{-CH}_3 \end{array}$



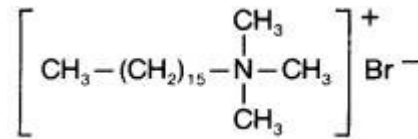
Benzyltriethylammoniumchlorid
Z.185°C



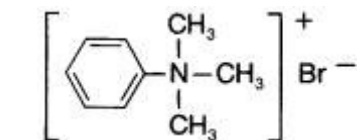
Benzyltrimethylammoniumchlorid
Z.235°C



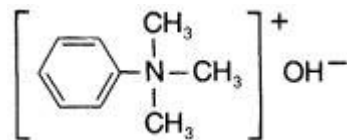
Benzyltrimethylammoniumhydroxid



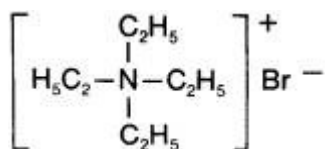
Hexadecyltrimethylammoniumbromid
Cetyltrimethylammoniumbromid
Z.~240°C



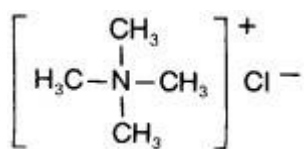
Phenyltrimethylammoniumbromid
Z.208°C



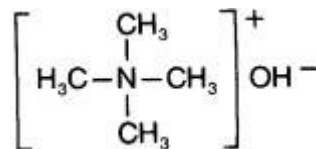
Phenyltrimethylammoniumhydroxid



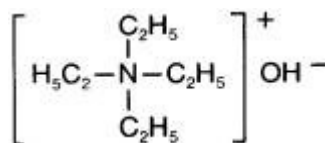
Tetraethylammoniumbromid
Z.286°C



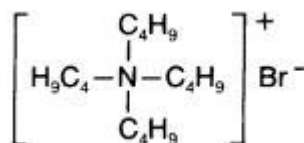
Tetramethylammoniumchlorid
Z.300°C



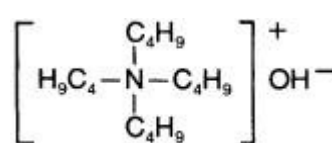
Tetramethylammoniumhydroxid



Tetraethylammoniumhydroxid



Tetrabutylammoniumbromid
F.103°C



Tetrabutylammoniumhydroxid