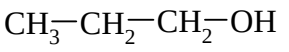
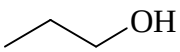
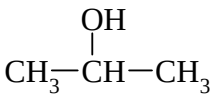
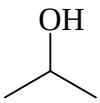
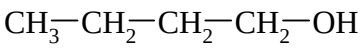
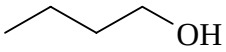
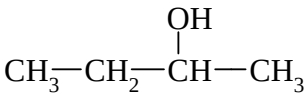
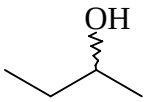
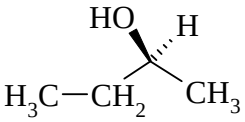
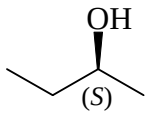
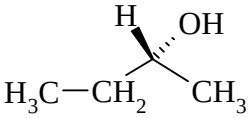
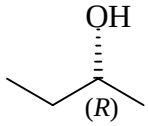
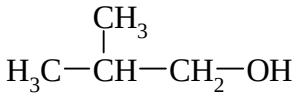
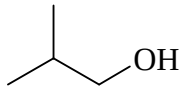
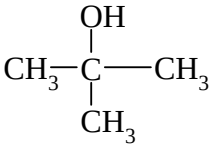
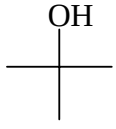
8.01

Homologe Reihe der unverzweigten primären Alkohole $C_nH_{(2n+2)}O$

systematischer Name	Konstitution	Siedepunkt [°C]	Schmelzpunkt [°C]
Methanol	CH_3-OH	65	– 98
Ethanol	CH_3-CH_2-OH	78	– 117
1-Propanol	$CH_3-CH_2-CH_2-OH$	97	– 126
1-Butanol	$CH_3-(CH_2)_2-CH_2-OH$	118	– 89
1-Pentanol	$CH_3-(CH_2)_3-CH_2-OH$	138	– 78
1-Hexanol	$CH_3-(CH_2)_4-CH_2-OH$	157	– 52
1-Heptanol	$CH_3-(CH_2)_5-CH_2-OH$	175	– 36
1-Octanol	$CH_3-(CH_2)_6-CH_2-OH$	194	– 15
⋮	⋮	⋮	⋮
1-Hexandecanol	$CH_3-(CH_2)_{14}-CH_2-OH$	344	50

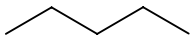
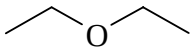
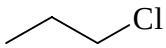
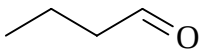
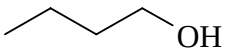
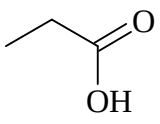
8.02

Konstitutions- und konfigurationsisomere Alkohole

systematischer Name **(Trivialname)**	**ausführliche Schreibweise**	**Stenographie**	**Siedep.** **[°C]**	**Schmelzp.** **[°C]**
1-Propanol (n-Propylalkohol)			97	– 126
2-Propanol (Isopropylalkohol)			82	– 89
1-Butanol (*n*-Butylalkohol)			118	– 89
2-Butanol (sekundärer Butylalkohol) (*sek*-Butanol)			100	– 114
				
				
2-Methyl-1-**propan**ol (Isobutylalkohol)			108	– 108
2-Methyl-2-**propan**ol (tertiärer Butylalkohol) (*tert*-Butanol)			82	24

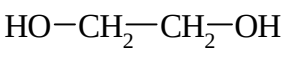
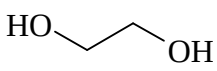
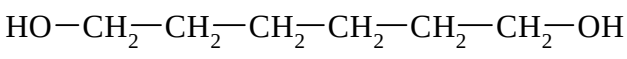
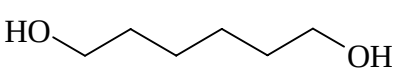
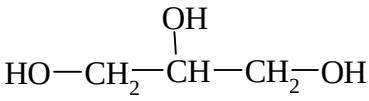
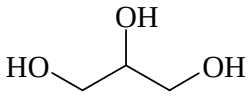
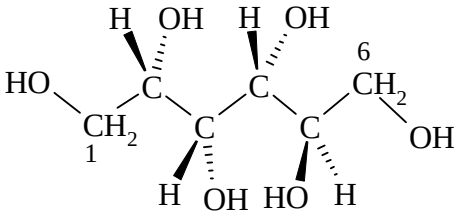
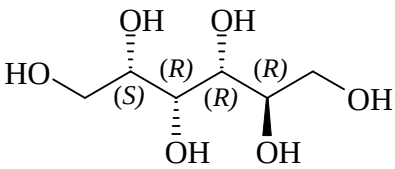
8.03

Vergleich unverzweigter Verbindungen mit ähnlicher Molmasse

systematischer Name ausführliche Schreibweise	Stenographie	Mol-masse	Dipol-moment [D]	Siede-punkt [°C]	Schmelz-punkt [°C]
Pentan $CH_3—CH_2—CH_2—CH_2—CH_3$		72	0	36	– 129
Diethylether $CH_3—CH_2—O—CH_2—CH_3$		74	1.18	35	– 116
1-Chlorpropan $CH_3—CH_2—CH_2—Cl$		79	2.10	47	– 123
1-Butanal $CH_3—CH_2—CH_2—C(=O)H$		72	2.72	75	– 96
1-Butanol $CH_3—CH_2—CH_2—CH_2—OH$		74	1.63	118	– 90
Propansäure $CH_2—CH_2—C(=O)OH$		74	1.68	141	– 22

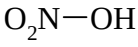
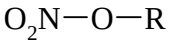
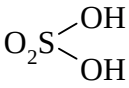
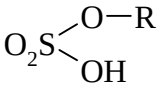
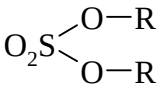
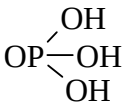
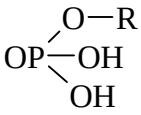
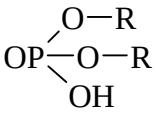
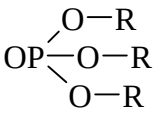
8.04

Alkohole mit mehreren Hydroxygruppen

systematischer Name (Trivialname)	**Struktur** ausführliche Schreibweise	Stenographie	**Siede-punkt** [°C]	**Schmelz-punkt** [°C]
1,2-**Ethan**diol (Ethylenglykol) (Glykol)			197	– 12
1,6-**Hexan**diol			250	42
1,2,3-**Propan**triol (Glycerin)			290	18
1,2,3,4,5,6-**Hexan**hexol (*D*-Sorbit)				92

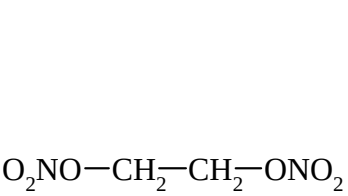
8.05

Mineralsäureester

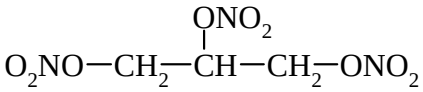
Mineralsäure		**Alkylester der Mineralsäure (R = Alkyl)**	
Salpetersäure HNO_3			Salpetersäurealkylester (Alkylnitrate)
Schwefelsäure H_2SO_4			Schwefelsäuremonoalkylester (Alkylsulfate)
			Schwefelsäuredialkylester (Disulfate)
Phosphorsäure H_3PO_4			Phosphorsäuremonoalkylester (Alkylphosphate)
			Phosphorsäuredialkylester (Dialkylphosphate)
			Phosphorsäuretrialkylester (Trialkylphosphate)

8.06

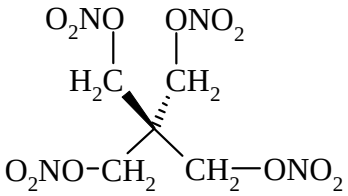
Salpetersäureester von Polyalkoholen sind Explosivstoffe



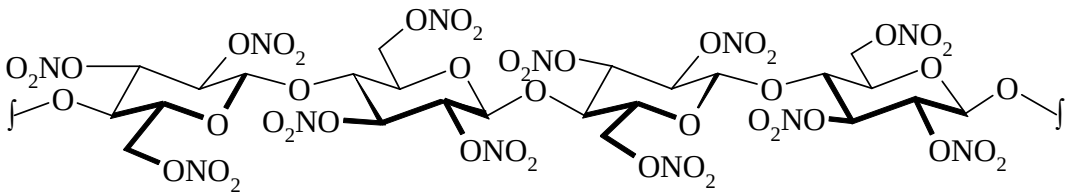
Glykol-dinitrat



Glycerin-trinitrat
(Nitroglycerin)
($\Delta H_{Zerfall} = -1377\ kJmol^{-1}$)



Pentaerythrit-tetranitrat
(Penitrit)



Cellulose-trinitrat
(Schießbaumwolle)

8.07

Alkoholgehalt von Getränken

Getränk	**Frucht**	**Stammwürze** **[%]**	**Ethanol** **[Vol%]**
Bier	Gerste	11 – 14	4.6 – 5.8
Starkbier		> 16	> 6.7
Apfelwein	Äpfel		8 – 9
Wein	Trauben		8 – 13
Liköre	Diverse Früchte		20 – 60
Branntwein	Diverse Früchte		32 – 60

Quelle: AID-Verbraucherdienst **35** (1990) Heft 5, S. 9

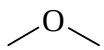
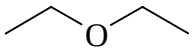
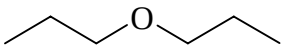
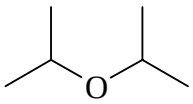
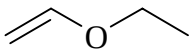
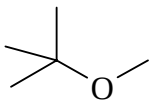
Flüchtige Alkohole außer Ethanol im Wein

Alkohole	**Weißwein** **(mg/l)**	**Rotwein** **(mg/l)**
Methanol	38 – 118	43 – 222
1-Propanol	9 – 48	11 – 52
2-Methyl-1-propanol	28 – 170	45 – 140
1-Butanol	1.4 – 8.5	2.1 – 2.3
(*S*)-(–)-2-Methyl-1-butanol	17 – 82	48 – 150
3-Methyl-1-butanol	70 – 320	117 – 490
1-Hexanol	3 – 10	3 – 10

Quelle: H.-D. Belitz, W. Grosch, Lehrbuch der Lebensmittelchemie, 3. Aufl., Springer, Heidelberg-Berlin, 1987

8.08

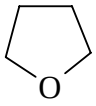
Acyclische Ether

sstematischer Name **(Trivialname)**	**Konstitution** **ausführliche Schreibweise**	**Stenographie**	**Siedep.** **[°C]**
Di**methyl**ether	$H_3C-O-CH_3$		– 23
Di**ethyl**ether (Ether)	$H_3C-CH_2-O-CH_2-CH_3$		35
Di-1-**propyl**ether	$H_3C-CH_2-CH_2-O-CH_2-CH_2-CH_3$		91
Di-2-**propyl**ether	$H_3C-CH(CH_3)-O-CH(CH_3)-CH_3$		68
Ethylvinylether	$H_2C=CH-O-CH_2-CH_3$		36
tert-**Butylmethyl**-ether (MtB)	$H_3C-C(CH_3)_2-O-CH_3$		55

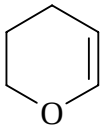
8.09

Cyclische Ether (das Sauerstoffatom ist Teil eines Ringes)

Oxiran
(Ethylenoxid)

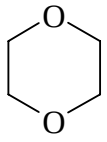


Tetrahydro**furan**
(THF)



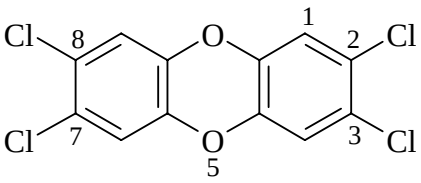
2,3-Dihydro**pyran**

Siedepunkt [°C]	14	67	86



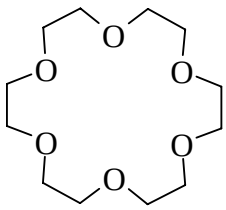
1,4-Dioxan

MAK = 180 mg/m^3



2,3,7,8-Tetrachlordibenzo-***p*-dioxin**
(TCDD**)**

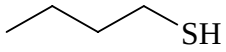
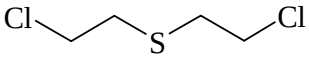
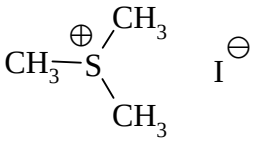
LD_{50} = 0.001 mg/kg Meerschweinchen
LD_{50} = 3 mg/kg Hamster



18-Krone-6
(ein Kronenether)

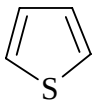
8.10

Acyclische Schwefel(II)-Verbindungen

Name (Trivialname)	**Konstitution** ausführliche Schreibweise	Stenographie	**Siedep.** [°C]
Methanthiol (Methylmercaptan)	H_3C-SH		6
1-**Butan**thiol (*n*-Butylmercaptan)	$H_3C-CH_2-CH_2-CH_2-SH$		98
Di**methyl**thioether (Dimethylsulfid	$H_3C-S-CH_3$		37
S-Lost (chemischer Kampfstoff, cancerogen)	$Cl-CH_2-CH_2-S-CH_2-CH_2-Cl$		217
Tri**methyl**sulfoniumiodid			
Di**methyl**disulfid	$CH_3-S-S-CH_3$		110

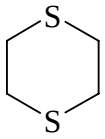
Cyclische Schwefel(II)-Verbindungen (das Schwefelatom ist Teil des Ringes)

Thiiran



Thiophen

1,3-Dithian

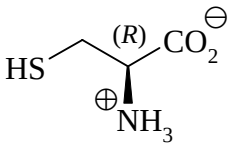


1,4-Dithian

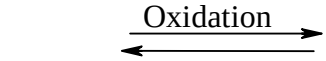
	Thiiran	Thiophen	1,3-Dithian	1,4-Dithian
Siedepunkt [°C]	55	84	207	199

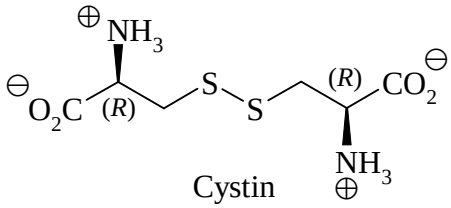
8.11

Schwefel(II)-haltige Carbonsäuren

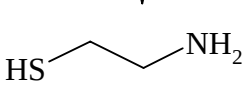


Cystein

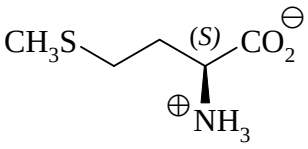




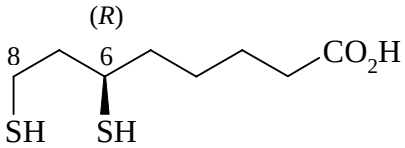
Cystin

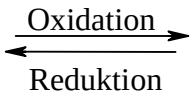


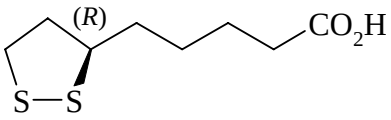
Cysteamin
(aktiver Teil von Coenzym A)



Methionin







Liponsäure (Thioctansäure)