Butane, 1-ethoxy-

Other names:	1-ETHOXYBUTANE
	3-oxaheptane
	Butyl ethyl ether
	ETHYL BUTYL ETHER
	ETHYL N-BUTYL ETHER
	Ether ethylbutylique
	Ether, butyl ethyl
	UN 1179
	ether, ethyl butyl
	n-Butyl ethyl ether
	n-C4H9OC2H5
Inchi:	InChI=1S/C6H14O/c1-3-5-6-7-4-2/h3-6H2,1-2H3
InchiKey:	PZHIWRCQKBBTOW-UHFFFAOYSA-N
Formula:	C6H14O
SMILES:	CCCCOCC
Mol. weight [g/mol]:	102.17
CAS:	628-81-9

Physical Properties

Property code	Value	Unit	Source
af	0.4000		KDB
dm	1.20	debye	KDB
gf	-105.36	kJ/mol	Joback Method
hf	-299.39	kJ/mol	Joback Method
hfus	12.48	kJ/mol	Joback Method
hvap	36.41	kJ/mol	NIST Webbook
hvap	36.30 ± 0.10	kJ/mol	NIST Webbook
hvap	36.50	kJ/mol	NIST Webbook
ie	9.36	eV	NIST Webbook
ie	9.53	eV	NIST Webbook
ie	9.30 ± 0.10	eV	NIST Webbook
log10ws	-1.42		Crippen Method
logp	1.823		Crippen Method
mcvol	101.270	ml/mol	McGowan Method
nfpaf	%!d(float64=3)		KDB
nfpah	%!d(float64=2)		KDB
pc	3040.00	kPa	KDB

rinpol	648.00		NIST Webbook
rinpol	669.00		NIST Webbook
rinpol	685.00		NIST Webbook
rinpol	668.70		NIST Webbook
rinpol	673.30		NIST Webbook
rinpol	684.00		NIST Webbook
rinpol	665.00		NIST Webbook
rinpol	669.00		NIST Webbook
rinpol	668.00		NIST Webbook
rinpol	684.00		NIST Webbook
rinpol	684.00		NIST Webbook
ripol	780.00		NIST Webbook
ripol	788.00		NIST Webbook
ripol	788.00		NIST Webbook
ripol	780.00		NIST Webbook
tb	365.20 ± 0.60	K	NIST Webbook
tb	365.25	K	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
tb	364.70	K	NIST Webbook
tb	365.40	K	NIST Webbook
tb	365.40	K	KDB
tb	365.90 ± 0.15	K	NIST Webbook
tb	365.50 ± 0.40	K	NIST Webbook
tc	531.00	K	KDB
tc	531.00	K	NIST Webbook
tf	170.00	K	KDB
vc	0.390	m3/kmol	KDB
zc	0.2685390		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	238.55	J/mol×K	523.60	Joback Method
cpg	191.99	J/mol×K	386.52	Joback Method
cpg	201.86	J/mol×K	413.93	Joback Method
cpg	211.45	J/mol×K	441.35	Joback Method
cpg	220.76	J/mol×K	468.76	Joback Method
cpg	229.79	J/mol×K	496.18	Joback Method
cpg	181.85	J/mol×K	359.10	Joback Method

dvisc	0.0003560	Pa×s	308.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0003756	Pa×s	303.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0003990	Pa×s	298.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0004242	Pa×s	293.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0004509	Pa×s	288.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0003416	Pa×s	313.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
dvisc	0.0004796	Pa×s	283.15	Experimental and Predicted Viscosities of Binary Mixtures Containing Chlorinated and Oxygenated Compounds
hvapt	31.63	kJ/mol	365.40	NIST Webbook
hvapt	32.10	kJ/mol	338.00	NIST Webbook
hvapt	36.32	kJ/mol	29.15	NIST Webbook
hvapt	35.20	kJ/mol	338.00	NIST Webbook

pvap	7.55	kPa	298.15	Experimental and predicted properties of the binary mixtures containing an isomeric chlorobutane and butyl ethyl ether
pvap	12.24	kPa	308.15	Experimental and predicted properties of the binary mixtures containing an isomeric chlorobutane and butyl ethyl ether
pvap	71.58	kPa	354.01	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	79.60	kPa	357.31	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	90.59	kPa	361.44	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	96.36	kPa	363.47	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	101.30	kPa	365.25	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	60.00	kPa	348.84	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane

pvap	38.60	kPa	336.22	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	56.24	kPa	346.80	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	51.67	kPa	344.21	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	44.96	kPa	340.35	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
pvap	4.47	kPa	288.15	Experimental and predicted properties of the binary mixtures containing an isomeric chlorobutane and butyl ethyl ether
pvap	63.63	kPa	350.44	Vapor Liquid Equilibria Measurements for Di-n-Propyl Ether and Butyl Ethyl Ether with n-Heptane
rhol	745.30	kg/m3	298.15	Vapor-Liquid Equilibrium Data for the Binary Decafluoropentane (HFC-43-10meec) + Heptane, Decafluoropentane + Butyl Ethyl Ether, Octafluorobutane (HFC-338pcc) + Butyl Ethyl Ether, and Heptafluoro Propyl Methyl Ether (HFE-347mcc) + HFC-338pcc Systems at 101.3 kPa
rhol	749.00	kg/m3	293.00	KDB

tcondl	0.10	W/m×K	333.39	Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane
tcondl	0.12	W/m×K	312.17	Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane
tcondl	0.12	W/m×K	299.62	Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane
tcondl	0.13	W/m×K	298.15	Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane
tcondl	0.09	W/m×K	354.63	Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.54411e+01
Coeff. B	-3.48473e+03
Coeff. C	-4.27170e+01
Temperature range (K), min.	272.68

Temperature range (K), max.	386.73

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	7.71283e+01
Coeff. B	-6.91569e+03
Coeff. C	-9.21874e+00
Coeff. D	6.10780e-06
Temperature range (K), min.	170.15
Temperature range (K), max.	531.00

Datasets

Mass density, kg/m3

Temperature, K - Liquid	Pressure, kPa - Liquid	Mass density, kg/m3 - Liquid
283.15	100.00	759.63
288.15	100.00	754.84
293.15	100.00	750.02
298.15	100.00	745.17
303.15	100.00	740.3
308.15	100.00	735.39
313.15	100.00	730.45
318.15	100.00	725.44
323.15	100.00	720.43
328.15	100.00	715.37
333.15	100.00	710.26
283.15	5000.00	764.45
288.15	5000.00	759.82
293.15	5000.00	755.18
298.15	5000.00	750.51
303.15	5000.00	745.81
308.15	5000.00	741.09
313.15	5000.00	736.34
318.15	5000.00	731.57
323.15	5000.00	726.77
328.15	5000.00	721.95

333.15	5000.00	717.05
283.15	10000.00	768.96
288.15	10000.00	764.48
293.15	10000.00	759.98
298.15	10000.00	755.44
303.15	10000.00	750.9
308.15	10000.00	746.35
313.15	10000.00	741.76
318.15	10000.00	737.2
323.15	10000.00	732.59
328.15	10000.00	727.94
333.15	10000.00	723.28
283.15	15000.00	773.2
288.15	15000.00	768.83
293.15	15000.00	764.45
298.15	15000.00	760.05
303.15	15000.00	755.66
308.15	15000.00	751.24
313.15	15000.00	746.82
318.15	15000.00	742.41
323.15	15000.00	738.0
328.15	15000.00	733.52
333.15	15000.00	729.03
283.15	20000.00	777.2
288.15	20000.00	772.96
293.15	20000.00	768.69
298.15	20000.00	764.43
303.15	20000.00	760.15
308.15	20000.00	755.87
313.15	20000.00	751.59
318.15	20000.00	747.31
323.15	20000.00	743.03
328.15	20000.00	738.72
333.15	20000.00	734.4
283.15	25000.00	781.05
288.15	25000.00	776.9
293.15	25000.00	772.75
298.15	25000.00	768.58
303.15	25000.00	764.45
308.15	25000.00	760.26
313.15	25000.00	756.09
318.15	25000.00	751.96
323.15	25000.00	747.78
328.15	25000.00	743.64

333.15	25000.00	739.43
283.15	30000.00	784.72
288.15	30000.00	780.66
293.15	30000.00	776.62
298.15	30000.00	772.55
303.15	30000.00	768.49
308.15	30000.00	764.45
313.15	30000.00	760.38
318.15	30000.00	756.38
323.15	30000.00	752.29
328.15	30000.00	748.27
333.15	30000.00	744.2
283.15	35000.00	788.24
288.15	35000.00	784.28
293.15	35000.00	780.33
298.15	35000.00	776.36
303.15	35000.00	772.35
308.15	35000.00	768.44
313.15	35000.00	764.5
318.15	35000.00	760.54
323.15	35000.00	756.59
328.15	35000.00	752.68
333.15	35000.00	748.71
283.15	40000.00	791.65
288.15	40000.00	787.77
293.15	40000.00	783.87
298.15	40000.00	780.01
303.15	40000.00	776.1
308.15	40000.00	772.26
313.15	40000.00	768.36
318.15	40000.00	764.55
323.15	40000.00	760.68
328.15	40000.00	756.87
333.15	40000.00	753.02
283.15	45000.00	794.97
288.15	45000.00	791.13
293.15	45000.00	787.34
298.15	45000.00	783.52
303.15	45000.00	779.71
308.15	45000.00	775.95
313.15	45000.00	772.14
318.15	45000.00	768.4
323.15	45000.00	764.61
328.15	45000.00	760.88

333.15	45000.00	757.13
283.15	50000.00	798.13
288.15	50000.00	794.37
293.15	50000.00	790.66
298.15	50000.00	786.91
303.15	50000.00	783.18
308.15	50000.00	779.48
313.15	50000.00	775.74
318.15	50000.00	772.07
323.15	50000.00	768.4
328.15	50000.00	764.73
333.15	50000.00	761.02
283.15	55000.00	801.25
288.15	55000.00	797.51
293.15	55000.00	793.86
298.15	55000.00	790.19
303.15	55000.00	786.51
308.15	55000.00	782.89
313.15	55000.00	779.22
318.15	55000.00	775.65
323.15	55000.00	771.97
328.15	55000.00	768.42
333.15	55000.00	764.8
283.15	60000.00	804.23
288.15	60000.00	800.57
293.15	60000.00	796.96
298.15	60000.00	793.36
303.15	60000.00	789.75
308.15	60000.00	786.19
313.15	60000.00	782.57
318.15	60000.00	779.08
323.15	60000.00	775.47
328.15	60000.00	771.99
333.15	60000.00	768.41
283.15	65000.00	807.14
288.15	65000.00	803.54
293.15	65000.00	799.99
298.15	65000.00	796.44
303.15	65000.00	792.89
308.15	65000.00	789.36
313.15	65000.00	785.85
318.15	65000.00	782.35
323.15	65000.00	778.87
328.15	65000.00	775.41

333.15	65000.00	771.92
Reference	*https://www.doi.org/10.1016/j.fluid.2016.02.009*	

Sources

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Density, Viscosity, and Thermal Conductivity of Mixtures of 1-Ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (HFE 7200) with Methanol and 1-Ethoxybutane :	https://www.doi.org/10.1021/je1011828
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KDB:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1015
KDB Vapor Pressure Data:	https://www.cheric.org/files/research/kdb/mol/mol1015.mol
	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1015

Legend

af:	Acentric Factor
cpg:	Ideal gas heat capacity
dm:	Dipole Moment
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hvap:	Enthalpy of vaporization at standard conditions
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient

mcvol:	McGowan's characteristic volume
nfpaf:	NFPA Fire Rating
nfpah:	NFPA Health Rating
pc:	Critical Pressure
pvap:	Vapor pressure
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tcondl:	Liquid thermal conductivity
tf:	Normal melting (fusion) point
vc:	Critical Volume
zc:	Critical Compressibility