Ethanol, 2-(2-methoxyethoxy)-

Other names:	2-(2-Methoxyethoxy)ethanol
	2-(Methoxyethoxy)ethanol
	3,6-Dioxa-1-heptanol
	Diethylene glycol methyl ether
	Diethylene glycol monomethyl ether
	Diglycol monomethyl ether
	Dowanol DM
	Ektasolve DM
	Ethanol, 2,2'-oxybis-, monomethyl ether
	Ethylene diglycol monomethyl ether
	Hicotol CAR
	MECB
	Methoxydiglycol
	Methyl carbitol
	Methyl di-icinol
	Methyl digol
	Methyl dioxitol
	Methyl karbitol
	NSC 2261
	Poly-Solv DM
	diethylene glycol, methyl ether
	diethylene glycol, monomethyl ether
	«beta»-Methoxy-«beta»'-hydroxydiethyl ether
	Â«betaÂ»-Methoxy-Â«betaÂ»'-hydroxydiethyl ether
Inchi:	InChI=1S/C5H12O3/c1-7-4-5-8-3-2-6/h6H,2-5H2,1H3
InchiKey:	SBASXUCJHJRPEV-UHFFFAOYSA-N
Formula:	C5H12O3
SMILES:	COCCOCCO
Mol. weight [g/mol]:	120.15
CAS:	111-77-3

Physical Properties

Property code	Value	Unit	Source
chl	-3010.00	kJ/mol	NIST Webbook
gf	-355.60	kJ/mol	Joback Method
hf	-563.20	kJ/mol	Joback Method

hfl	-670.30	kJ/mol	NIST Webbook
hfus	15.17	kJ/mol	Joback Method
hvap	48.22	kJ/mol	Joback Method
log10ws	0.65		Crippen Method
logp	-0.358		Crippen Method
mcvol	98.920	ml/mol	McGowan Method
pc	3670.00 ± 150.00	kPa	NIST Webbook
rinpol	920.00		NIST Webbook
rinpol	947.00		NIST Webbook
rinpol	908.00		NIST Webbook
rinpol	924.00		NIST Webbook
rinpol	932.00		NIST Webbook
rinpol	937.80		NIST Webbook
rinpol	907.00		NIST Webbook
ripol	1620.00		NIST Webbook
ripol	1589.00		NIST Webbook
ripol	1576.00		NIST Webbook
ripol	1553.00		NIST Webbook
tb	466.20	K	NIST Webbook
tb	466.10 ± 0.70	K	NIST Webbook
tb	502.40 ± 2.50	K	NIST Webbook
tb	471.00 ± 3.00	K	NIST Webbook
tc	672.00 ± 2.00	K	NIST Webbook
tf	251.39	K	Joback Method
vc	0.370	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	212.62	J/mol×K	450.82	Joback Method
cpg	258.36	J/mol×K	612.92	Joback Method
cpg	251.25	J/mol×K	585.91	Joback Method
cpg	243.93	J/mol×K	558.89	Joback Method
cpg	236.40	J/mol×K	531.87	Joback Method
cpg	228.67	J/mol×K	504.85	Joback Method
cpg	220.74	J/mol×K	477.84	Joback Method

cpl	273.40	J/mol×K	319.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	275.30	J/mol×K	325.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	274.70	J/mol×K	323.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	276.00	J/mol×K	327.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	276.60	J/mol×K	329.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	277.30	J/mol×K	331.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	278.00	J/mol×K	333.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	

cpl	278.70	J/mol×K	335.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	279.40	J/mol×K	337.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	280.10	J/mol×K	339.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	261.90	J/mol×K	275.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	262.30	J/mol×K	277.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	262.70	J/mol×K	279.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	263.20	J/mol×K	281.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	263.60	J/mol×K	283.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	264.10	J/mol×K	285.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	264.60	J/mol×K	287.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	274.00	J/mol×K	321.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	265.60	J/mol×K	291.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	266.10	J/mol×K	293.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	266.60	J/mol×K	295.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	267.10	J/mol×K	297.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	267.40	J/mol×K	298.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	267.60	J/mol×K	299.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	268.20	J/mol×K	301.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	268.70	J/mol×K	303.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	269.30	J/mol×K	305.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	269.80	J/mol×K	307.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	

cpl	270.40	J/mol×K	309.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	271.00	J/mol×K	311.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	271.60	J/mol×K	313.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	272.20	J/mol×K	315.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	272.80	J/mol×K	317.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	265.10	J/mol×K	289.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
dvisc	0.0060175	Pa×s	284.63	Joback Method
dvisc	0.0004929	Pa×s	384.34	Joback Method
dvisc	0.0009692	Pa×s	351.11	Joback Method
dvisc	0.0021951	Pa×s	317.87	Joback Method
dvisc	0.0215378	Pa×s	251.39	Joback Method
dvisc	0.0001719	Pa×s	450.82	Joback Method
dvisc	0.0002792	Pa×s	417.58	Joback Method
hvapt	51.90	kJ/mol	425.50	NIST Webbook

rfi	1.42450		298.15	Volumetric and viscometric study of aqueous binary mixtures of some glycol ethers at T = (275.15 and 283.15) K
rfi	1.42500		298.15	Thermodynamic and optical studies of some ethylene glycol ethers in aqueous solutions at T = 298.15 K
rfi	1.42420		298.15	Physical and excess properties of a room temperature ionic liquid (1-methyl-3-octylimidazolium tetrafluoroborate) with n-alkoxyethanols (C1Em, m = 1 to 3) at T = (298.15 to 318.15) K
rhol	975.00	kg/m3	343.15	Thermophysical properties of glycols and glymes
rhol	1024.20	kg/m3	288.15	Thermophysical properties of glycols and glymes
rhol	1019.80	kg/m3	293.15	Thermophysical properties of glycols and glymes
rhol	1028.60	kg/m3	283.15	Thermophysical properties of glycols and glymes
rhol	1015.40	kg/m3	298.15	Thermophysical properties of glycols and glymes
rhol	1011.00	kg/m3	303.15	Thermophysical properties of glycols and glymes
rhol	1006.60	kg/m3	308.15	Thermophysical properties of glycols and glymes
rhol	1002.10	kg/m3	313.15	Thermophysical properties of glycols and glymes

rhol	993.20	kg/m3	323.15	Thermophysical properties of glycols and glymes
rhol	984.10	kg/m3	333.15	Thermophysical properties of glycols and glymes
rhol	1016.43	kg/m3	298.15	Speeds of Sound and Isentropic Compressibilities of n-Alkoxyethanols and Polyethers with Propylamine at 298.15K
rhol	1020.80	kg/m3	293.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1016.40	kg/m3	298.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1011.83	kg/m3	303.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1007.69	kg/m3	308.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1003.22	kg/m3	313.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures

rhol	1015.60	kg/m3	298.15	Excess molar enthalpies and volumes of binary mixtures of nonafluorobutylmethylether with ethylene glycol ethers at T = 298.15 K
rhol	953.10	kg/m3	368.15	Thermophysical properties of glycols and glymes
rhol	1021.00	kg/m3	293.15	Thermophysical properties of glycols and glymes
rhol	1016.30	kg/m3	298.15	Thermophysical properties of glycols and glymes
rhol	1011.90	kg/m3	303.15	Thermophysical properties of glycols and glymes
rhol	1007.40	kg/m3	308.15	Thermophysical properties of glycols and glymes
rhol	1003.00	kg/m3	313.15	Thermophysical properties of glycols and glymes
rhol	998.80	kg/m3	318.15	Thermophysical properties of glycols and glymes
rhol	994.30	kg/m3	323.15	Thermophysical properties of glycols and glymes
rhol	989.80	kg/m3	328.15	Thermophysical properties of glycols and glymes
rhol	985.30	kg/m3	333.15	Thermophysical properties of glycols and glymes
rhol	981.00	kg/m3	338.15	Thermophysical properties of glycols and glymes
rhol	976.50	kg/m3	343.15	Thermophysical properties of glycols and glymes
rhol	971.80	kg/m3	348.15	Thermophysical properties of glycols and glymes

rhol	967.20	kg/m3	353.15	Thermophysical properties of glycols and glymes
rhol	962.50	kg/m3	358.15	Thermophysical properties of glycols and glymes
rhol	957.90	kg/m3	363.15	Thermophysical properties of glycols and glymes
rhol	1025.30	kg/m3	288.15	Thermophysical properties of glycols and glymes
rhol	948.50	kg/m3	373.15	Thermophysical properties of glycols and glymes
speedsl	1451.00	m/s	288.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
speedsl	1434.00	m/s	293.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
speedsl	1416.00	m/s	298.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures

speedsl	1382.00	m/s	308.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
speedsl	1366.00	m/s	313.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
speedsl	1349.00	m/s	318.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
speedsl	1399.00	m/s	303.15	Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures
srf	0.03	N/m	298.15	Experimental Surface Tensions and Derived Surface Properties of Binary Mixtures of Water + Alkoxyethanols (C1Em, m = 1, 2, 3) and Water + Ethylene Glycol Dimethyl Ether (C1E1C1) at (298.15, 308.15, and 318.15) K

srf	0.03	N/m	308.15	Experimental Surface Tensions and Derived Surface Properties of Binary Mixtures of Water + Alkoxyethanols (C1Em, m = 1, 2, 3) and Water + Ethylene Glycol Dimethyl Ether (C1E1C1) at (298.15, 308.15, and 318.15) K	
srf	0.03	N/m	318.15	Experimental Surface Tensions and Derived Surface Properties of Binary Mixtures of Water + Alkoxyethanols (C1Em, m = 1, 2, 3) and Water + Ethylene Glycol Dimethyl Ether (C1E1C1) at (298.15, 308.15, and 318.15) K	

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.78402e+01
Coeff. B	-5.84302e+03
Coeff. C	-2.48290e+01
Temperature range (K), min.	357.72
Temperature range (K), max.	491.20

Datasets

Mass density, kg/m3

Temperature, K - Liquid	Pressure, kPa - Liquid	Mass density, kg/m3 - Liquid
283.15	100.00	1028.5
283.15	1000.00	1029.0
283.15	2500.00	1029.8
283.15	5000.00	1031.2
283.15	7500.00	1032.5
283.15	10000.00	1033.9
283.15	15000.00	1036.4
283.15	20000.00	1039.0
283.15	25000.00	1041.4
293.15	100.00	1019.5
293.15	1000.00	1020.0
293.15	2500.00	1020.9
293.15	5000.00	1022.3
293.15	7500.00	1023.7
293.15	10000.00	1025.2
293.15	15000.00	1027.9
293.15	20000.00	1030.5
293.15	25000.00	1033.1
303.15	100.00	1010.8
303.15	1000.00	1011.3
303.15	2500.00	1012.2
303.15	5000.00	1013.6
303.15	7500.00	1015.0
303.15	10000.00	1016.4
303.15	15000.00	1019.3
303.15	20000.00	1022.1
303.15	25000.00	1024.8
313.15	100.00	1002.0
313.15	1000.00	1002.6
313.15	2500.00	1003.5
313.15	5000.00	1005.1
313.15	7500.00	1006.7
313.15	10000.00	1008.2
313.15	15000.00	1011.2
313.15	20000.00	1014.1
313.15	25000.00	1016.9
323.15	100.00	993.2
323.15	1000.00	993.9
323.15	2500.00	994.9
323.15	5000.00	996.6
323.15	7500.00	998.3
323.15	10000.00	1000.0
323.15	15000.00	1003.2

323.15	20000.00	1006.2
323.15	25000.00	1009.2
333.15	100.00	983.9
333.15	1000.00	984.6
333.15	2500.00	985.6
333.15	5000.00	987.4
333.15	7500.00	989.1
333.15	10000.00	990.8
333.15	15000.00	994.1
333.15	20000.00	997.2
333.15	25000.00	1000.2
343.15	100.00	975.2
343.15	1000.00	975.8
343.15	2500.00	977.0
343.15	5000.00	978.8
343.15	7500.00	980.6
343.15	10000.00	982.4
343.15	15000.00	985.9
343.15	20000.00	989.2
343.15	25000.00	992.4
353.15	100.00	965.7
353.15	1000.00	966.4
353.15	2500.00	967.6
353.15	5000.00	969.5
353.15	7500.00	971.4
353.15	10000.00	973.3
353.15	15000.00	976.9
353.15	20000.00	980.4
353.15	25000.00	983.7

Reference *https://www.doi.org/10.1021/je034218n*

Sources

Crippen Method: https://www.chemeo.com/doc/models/crippen_log10ws

Thermophysical properties of ionic liquid {1-butyl-3-methylimidazolium bromide [bmim][Br] + alkoxyalkanols + water} mixtures at different temperatures: https://www.doi.org/10.1016/j.jct.2012.08.023

The Yaws Handbook of Vapor Pressure: https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure

Joback Method: https://en.wikipedia.org/wiki/Joback_method

Excess molar enthalpies and volumes of binary mixtures of nonafluorobutylmethylether with ethylene glycol ethers at T = 298.15 K: https://www.doi.org/10.1016/j.jct.2005.02.011

McGowan Method: http://link.springer.com/article/10.1007/BF02311772

NIST Webbook: http://webbook.nist.gov/cgi/cbook.cgi?ID=C111773&Units=SI

Liquid Density Measurements of Diethylene Glycol Monoalkyl Ethers as a Function of Temperature and Pressure	https://www.doi.org/10.1021/je034218n
Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	https://www.doi.org/10.1021/acs.jced.5b00051
Physical and excess properties of a room temperature ionic liquid (1-methyl-3-octylimidazolium tetrafluoroborate) with some glycols at different temperatures	https://www.doi.org/10.1016/j.jct.2007.09.011
Volumetric and viscometric study of aqueous binary mixtures of some 2-alkoxyethanols (C1E1, C1E2, C1E3, C1E4) at T = (298.15 to 318.15) K	https://www.doi.org/10.1016/j.jct.2011.07.008
Compressibilities of n-Alkoxyethanols and Polyethers with Propylamine at 298.15K	https://www.doi.org/10.1007/s10765-006-0047-0
Density, Speed of Sound and Isentropic Compressibilities of Some Ethylene Glycol Dimethyl Ethers at (298.15, 308.15, and 318.15) K:	https://www.doi.org/10.1021/je030173e
Experimental Surface Tensions and Derived Surface Properties of Binary Mixtures of Water + Alkoxyethanols (C1Em, m = 1, 2, 3) and Water + Polyethers with Propylamine at 298.15K	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Orrick-Erbar Method:	
Thermophysical properties of glycols and glymes	https://www.doi.org/10.1021/acs.jced.5b00662
Thermodynamic and optical studies of some ethylene glycol ethers in aqueous solutions at T = 298.15 K:	https://www.doi.org/10.1016/j.jct.2009.01.010
Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures:	https://www.doi.org/10.1016/j.jct.2004.09.014
Volumetric and Acoustic Properties of Binary Mixtures of the Ionic Liquid 1-Butyl-3-methylimidazolium Tetrafluoroborate [bmim][BF4] with Alkoxyalkanols at Different Temperatures	https://www.doi.org/10.1021/je2010209

Legend

chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas heat capacity
cpl:	Liquid phase heat capacity
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfl:	Liquid phase 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
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
rfi:	Refractive Index
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
speedsl:	Speed of sound in fluid
srf:	Surface Tension
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume