Ethanol, 2-[2-(2-methoxyethoxy)ethoxy]-

Other names:	2-[2-(2-methoxyethoxy)ethoxy]ethanol
	3,6,9-trioxa-1-decanol
	3,6,9-trioxadecanol
	Dowanol TMAT
	NSC 97395
	Poly-Solv TM
	Triethylene glycol methyl ether
	methoxytriethylene glycol
	methoxytriglycol
	methyltrioxitol
	triethylene glycol monomethyl ether
	triglycol monomethyl ether
Inchi:	InChI=1S/C7H16O4/c1-9-4-5-11-7-6-10-3-2-8/h8H,2-7H2,1H3
InchiKey:	JLGLQAWTXXGVEM-UHFFFAOYSA-N
Formula:	C7H16O4
SMILES:	COCCOCCOCCO
Mol. weight [g/mol]:	164.20
CAS:	112-35-6

Physical Properties

Property code	Value	Unit	Source
gf	-443.76	kJ/mol	Joback Method
hf	-736.70	kJ/mol	Joback Method
hfus	21.54	kJ/mol	Joback Method
hvap	55.09	kJ/mol	Joback Method
log10ws	0.72		Crippen Method
logp	-0.342		Crippen Method
mcvol	132.970	ml/mol	McGowan Method
pc	2925.00	kPa	Joback Method
rinpol	1219.00		NIST Webbook
rinpol	1225.60		NIST Webbook
rinpol	1225.60		NIST Webbook
rinpol	1219.00		NIST Webbook
rinpol	1150.00		NIST Webbook
ripol	1963.00		NIST Webbook
ripol	1963.00		NIST Webbook
tb	521.00 ± 3.00	K	NIST Webbook

tb	518.40 ± 0.60	K	NIST Webbook
tb	522.20	K	NIST Webbook
tc	679.61	K	Joback Method
tf	296.16	K	Joback Method
vc	0.500	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	318.49	J/mol×K	519.00	Joback Method
cpg	328.80	J/mol×K	545.77	Joback Method
cpg	338.84	J/mol×K	572.54	Joback Method
cpg	348.59	J/mol×K	599.30	Joback Method
cpg	358.06	J/mol×K	626.07	Joback Method
cpg	367.23	J/mol×K	652.84	Joback Method
cpg	376.08	J/mol×K	679.61	Joback Method
cpl	367.60	J/mol×K	339.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	352.20	J/mol×K	275.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	352.90	J/mol×K	279.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	353.20	J/mol×K	281.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	353.60	J/mol×K	283.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	353.90	J/mol×K	285.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	354.30	J/mol×K	287.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	354.70	J/mol×K	289.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	355.10	J/mol×K	291.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	355.50	J/mol×K	293.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	355.90	J/mol×K	295.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	356.30	J/mol×K	297.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	356.60	J/mol×K	298.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	356.80	J/mol×K	299.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	357.20	J/mol×K	301.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	357.70	J/mol×K	303.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	358.10	J/mol×K	305.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	358.60	J/mol×K	307.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	359.10	J/mol×K	309.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	359.60	J/mol×K	311.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	360.10	J/mol×K	313.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	360.60	J/mol×K	315.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	361.20	J/mol×K	317.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	361.70	J/mol×K	319.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	
cpl	362.20	J/mol×K	321.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)	

cpl	362.80	J/mol×K	323.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	363.40	J/mol×K	325.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	364.00	J/mol×K	327.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	364.50	J/mol×K	329.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	365.10	J/mol×K	331.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	365.80	J/mol×K	333.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	366.40	J/mol×K	335.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)

cpl	367.00	J/mol×K	337.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
cpl	352.60	J/mol×K	277.15	Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CnEm)
dvisc	0.0073569	Pa×s	296.16	Joback Method
dvisc	0.0023304	Pa×s	333.30	Joback Method
dvisc	0.0009295	Pa×s	370.44	Joback Method
dvisc	0.0004384	Pa×s	407.58	Joback Method
dvisc	0.0002344	Pa×s	444.72	Joback Method
dvisc	0.0001380	Pa×s	481.86	Joback Method
dvisc	0.0000877	Pa×s	519.00	Joback Method
rfi	1.43673		298.15	Excess molar volumes and excess molar enthalpies of the binary mixtures of 1,2-dichloropropane with di- and triethylene glycol mono-alkyl ethers at T=298.15K
rfi	1.43620		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	1030.01	kg/m3	313.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures

rhol	1047.29	kg/m3	293.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1042.97	kg/m3	298.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1043.06	kg/m3	298.15	Speeds of Sound and Isentropic Compressibilities of n-Alkoxyethanols and Polyethers with Propylamine at 298.15K
rhol	1034.33	kg/m3	308.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
rhol	1038.65	kg/m3	303.15	Volumetric properties of binary mixtures of alkoxyethanols with ethyl tert-butyl ether at various temperatures
speedsl	1470.00	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	1436.00	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	1421.00	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
speedsl	1408.00	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	1393.00	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	1376.00	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	1452.00	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

srf	0.04	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
srf	0.04	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	0.04	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

Pressure Dependent Properties

Property code	Value	Unit	Pressure [kPa]	Source
tbrp	395.20	K	1.30	NIST Webbook

Sources

NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C112356&Units=SI
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Excess molar volumes and excess molar enthalpies of the binary mixtures of 1,2-dichloropropane with di- and triethylene glycol mono-alkyl ethers at T=298.15K:	https://www.doi.org/10.1016/j.fluid.2009.06.018
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Thermophysical properties of ionic liquid {1-butyl-3-methylimidazolium bromide [bmim][Br] in alkoxyalkanols + water} mixtures at different temperatures:	https://www.doi.org/10.1016/j.jct.2012.08.023
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
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
Volumetric properties of binary mixtures of alkoxyethanols with ethyl acetate at different temperatures:	https://www.doi.org/10.1016/j.jct.2004.09.014
Measurement and Prediction of Molar Heat Capacities of Liquid Polyoxyethylene Glycol Monoalkyl Ethers (CiEm):	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 n-alkoxyethanols (C1Em, m = 1 to 3) at (298.15 to 318.15) K:	https://www.doi.org/10.1016/j.jct.2007.09.011
Speeds of Sound and Isentropic Compressibilities of n-Alkoxyethanols and Polyethers with Propylamine at 298.15K:	https://www.doi.org/10.1007/s10765-006-0047-0
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
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:	https://www.doi.org/10.1021/je030173e

Legend

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
hfus:	Enthalpy of fusion at standard conditions
hvap:	Enthalpy of vaporization at standard conditions
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical 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
tbrp:	Boiling point at reduced pressure
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume

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