Ethyl Oleate

Other names:	(Z)-9-Octadecenoic acid ethyl ester
	(Z)-9-octadecenoic acid, ethyl ester
	9-Octadecenoic acid (Z)-, ethyl ester
	Ethyl Z-9-octadecenoate
	Ethyl cis-9-octadecenoate
	ethyl (Z)-9-octadeceneoate
	oleic acid, ethyl ester
Inchi:	InChI=1S/C20H38O2/c1-3-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20(21)22-4-2/h11-1
InchiKey:	LVGKNOAMLMIIKO-QXMHVHEDSA-N
Formula:	C20H38O2
SMILES:	CCCCCCCCC=CCCCCCCCC(=O)OCC
Mol. weight [g/mol]:	310.51
CAS:	111-62-6

Physical Properties

Property code	Value	Unit	Source
chl	-12525.00 ± 12.00	kJ/mol	NIST Webbook
chl	-12481.50	kJ/mol	NIST Webbook
gf	-36.18	kJ/mol	Joback Method
hf	-583.71	kJ/mol	Joback Method
hfus	47.73	kJ/mol	Solid liquid equilibrium in ternary mixtures of ethyl oleate, ethyl laurate and ethyl palmitate
hvap	69.23	kJ/mol	Joback Method
log10ws	-6.91		Crippen Method
logp	6.587		Crippen Method
mcvol	295.800	ml/mol	McGowan Method
pc	1082.06	kPa	Joback Method
rinpol	2150.00		NIST Webbook
rinpol	2179.00		NIST Webbook
rinpol	2171.00		NIST Webbook
rinpol	2171.00		NIST Webbook
rinpol	2179.00		NIST Webbook
rinpol	2168.80		NIST Webbook
rinpol	2185.00		NIST Webbook
rinpol	2175.00		NIST Webbook
rinpol	2180.00		NIST Webbook

rinpol	2149.00		NIST Webbook
rinpol	2173.00		NIST Webbook
rinpol	2171.00		NIST Webbook
rinpol	2172.00		NIST Webbook
rinpol	2155.00		NIST Webbook
rinpol	2168.00		NIST Webbook
rinpol	2173.00		NIST Webbook
rinpol	2149.00		NIST Webbook
rinpol	2175.00		NIST Webbook
rinpol	2175.00		NIST Webbook
rinpol	2185.00		NIST Webbook
rinpol	2175.00		NIST Webbook
rinpol	2142.00		NIST Webbook
rinpol	2142.00		NIST Webbook
rinpol	2180.00		NIST Webbook
rinpol	2160.00		NIST Webbook
ripol	2489.00		NIST Webbook
ripol	2455.00		NIST Webbook
ripol	2470.00		NIST Webbook
ripol	2445.00		NIST Webbook
ripol	2461.00		NIST Webbook
ripol	2484.00		NIST Webbook
ripol	2468.00		NIST Webbook
ripol	2480.00		NIST Webbook
ripol	2480.00		NIST Webbook
ripol	2472.00		NIST Webbook
ripol	2470.00		NIST Webbook
ripol	2476.00		NIST Webbook
ripol	2487.00		NIST Webbook
ripol	2489.00		NIST Webbook
ripol	2493.00		NIST Webbook
ripol	2446.00		NIST Webbook
ripol	2446.00		NIST Webbook
ripol	2442.00		NIST Webbook
tb	479.70	K	NIST Webbook
tc	911.93	K	Joback Method
tf	254.00	K	Influence of Additives (Isoamyl Laurate or Isoamyl Nonanoate) in the Solid-Liquid Equilibrium of Fatty Acid Ethyl Esters
tf	293.15 ± 4.00	K	NIST Webbook
vc	1.159	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	885.45	J/mol×K	737.45	Joback Method
cpg	904.58	J/mol×K	766.53	Joback Method
cpg	922.81	J/mol×K	795.61	Joback Method
cpg	940.17	J/mol×K	824.69	Joback Method
cpg	956.69	J/mol×K	853.77	Joback Method
cpg	972.40	J/mol×K	882.85	Joback Method
cpg	987.32	J/mol×K	911.93	Joback Method
dvisc	0.0017018	Pa×s	363.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0088392	Pa×s	283.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0075953	Pa×s	288.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0065909	Pa×s	293.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0057694	Pa×s	298.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0050921	Pa×s	303.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0045248	Pa×s	308.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0040480	Pa×s	313.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0036409	Pa×s	318.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0032922	Pa×s	323.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters

dvisc	0.0029905	Pa×s	328.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0027294	Pa×s	333.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0103900	Pa×s	278.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0023014	Pa×s	343.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0021243	Pa×s	348.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0019671	Pa×s	353.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0018272	Pa×s	358.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
dvisc	0.0025016	Pa×s	338.15	Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters
hvapt	92.40	kJ/mol	432.50	NIST Webbook
pvap	8.00	kPa	528.56	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry
pvap	2.67	kPa	500.98	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry
pvap	4.00	kPa	508.03	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry
pvap	5.33	kPa	514.61	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry

pvap	6.67	kPa	523.69	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry	
pvap	1.33	kPa	486.64	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry	
pvap	9.33	kPa	536.83	Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry	
pvap	5.33	kPa	514.61	Vapor liquid equilibrium of fatty acid ethyl esters determined using DSC	
pvap	9.33	kPa	536.83	Vapor liquid equilibrium of fatty acid ethyl esters determined using DSC	
rhol	865.23	kg/m3	298.15	A systematic study on volumetric and transport properties of binary systems 1-propanol + n-hexadecane, 1-butanol + n-hexadecane and 1-propanol + ethyl oleate at different temperatures: Experimental and modeling	

rhol	861.60	kg/m3	303.15	A systematic study on volumetric and transport properties of binary systems 1-propanol + n-hexadecane, 1-butanol + n-hexadecane and 1-propanol + ethyl oleate at different temperatures: Experimental and modeling
rhol	857.97	kg/m3	308.15	A systematic study on volumetric and transport properties of binary systems 1-propanol + n-hexadecane, 1-butanol + n-hexadecane and 1-propanol + ethyl oleate at different temperatures: Experimental and modeling

Sources

McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Densities and Viscosities of Fatty Acid Methyl and Ethyl Esters:	https://www.doi.org/10.1021/je100042c
Vapor liquid equilibrium of fatty acid ethyl esters determined using DSC:	https://www.doi.org/10.1016/j.tca.2010.10.002
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Influence of Additives (Isoamyl Laurate or Isoamyl Nonanoate) in the Solid-Liquid Equilibrium of Fatty Acid Ethyl Esters:	https://www.doi.org/10.1021/acs.jced.8b01019
Solid-liquid equilibrium in ternary mixtures of ethyl oleate, ethyl laurate and ethyl palmitate:	https://www.doi.org/10.1016/j.fluid.2012.11.030
Determination of the vapor pressure of ethyl esters by Differential Scanning Calorimetry:	https://www.doi.org/10.1016/j.jct.2011.01.017
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C111626&Units=SI
A systematic study on volumetric and transport properties of binary systems 1-propanol + n-hexadecane, 1-butanol + n-hexadecane and 1-propanol + ethyl oleate at different temperatures: Experimental and modeling:	https://www.doi.org/10.1016/j.fluid.2018.05.028
Joback Method:	https://en.wikipedia.org/wiki/Joback_method

Legend

chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas 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
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
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume