Ethane, 1,1-dichloro-1,2,2,2-tetrafluoro-

Other names:	1,1,1,2-TETRAFLUORO-2,2-DICHLOROETHANE
	1,1-DICHLORO-1,2,2,2-TETRAFLUOROETHANE
	1,1-Dichlorotetrafluoroethane
	Ethane, 1,1-dichlorotetrafluoro-
	Frigen 114A
	R-114a
	REFRIGERANT-114A
	freon 114a
Inchi:	InChI=1S/C2Cl2F4/c3-1(4,5)2(6,7)8
InchiKey:	BAMUEXIPKSRTBS-UHFFFAOYSA-N
Formula:	C2Cl2F4
SMILES:	FC(F)(F)C(F)(Cl)Cl
Mol. weight [g/mol]:	170.92
CAS:	374-07-2

Physical Properties

Property code	Value	Unit	Source
af	0.2630		KDB
gf	-831.46	kJ/mol	Joback Method
hf	-918.03	kJ/mol	Joback Method
hfus	6.82	kJ/mol	Joback Method
hvap	22.96	kJ/mol	Joback Method
log10ws	-2.58		Crippen Method
logp	2.650		Crippen Method
mcvol	70.600	ml/mol	McGowan Method
pc	3300.00	kPa	KDB
pc	3302.58 ± 103.42	kPa	NIST Webbook
rhoc	582.84 ± 15.04	kg/m3	NIST Webbook
tb	277.00	K	KDB
tb	276.00	K	NIST Webbook
tb	277.00	K	NIST Webbook
tc	418.60	K	KDB
tc	418.65 ± 0.80	K	NIST Webbook
tf	216.50	K	KDB
vc	0.294	m3/kmol	KDB
zc	0.2787570		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	143.11	J/mol×K	475.11	Joback Method
cpg	113.79	J/mol×K	310.64	Joback Method
cpg	119.86	J/mol×K	338.05	Joback Method
cpg	125.42	J/mol×K	365.46	Joback Method
cpg	130.50	J/mol×K	392.87	Joback Method
cpg	135.13	J/mol×K	420.28	Joback Method
cpg	139.32	J/mol×K	447.70	Joback Method
hvapt	17.70	kJ/mol	353.00	NIST Webbook
hvapt	23.50	kJ/mol	302.00	NIST Webbook
hvapt	23.20	kJ/mol	233.00	NIST Webbook
hvapt	22.50	kJ/mol	273.00	NIST Webbook
hvapt	20.80	kJ/mol	313.00	NIST Webbook
rhol	1455.00	kg/m3	298.00	KDB

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.37023e+01
Coeff. B	-2.09657e+03
Coeff. C	-4.52020e+01
Temperature range (K), min.	201.49
Temperature range (K), max.	418.55

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	7.69813e+01
Coeff. B	-5.00402e+03
Coeff. C	-9.84202e+00
Coeff. D	1.42279e-05
Temperature range (K), min.	217.00

Temperature range (K), max.	414.96

Sources

NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C374072&Units=SI
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Solubility Differences of Halocarbon Isomers in Ionic Liquid [emim][Tf2N]:	https://www.doi.org/10.1021/je700295e
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
KDB Vapor Pressure Data:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1536
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
KDB:	https://www.cheric.org/files/research/kdb/mol/mol1536.mol
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
KDB Pure (Korean Thermophysical Properties Databank):	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1536
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l

Legend

af:	Acentric Factor
cpg:	Ideal gas heat capacity
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
rhoc:	Critical density
rhol:	Liquid Density
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume
zc:	Critical Compressibility

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