Ethane, 1,2-dichloro-1,1,2-trifluoro-

Other names:	1,1,2-Trifluoro-1,2-dichloroethane
	1,2-Dichloro-1,1,2-trifluoroethane
	1,2-Dichlorotrifluoroethane
	CF2ClCHFCl
	R-123a
	freon 123a
Inchi:	InChI=1S/C2HCl2F3/c3-1(5)2(4,6)7/h1H
InchiKey:	YMRMDGSNYHCUCL-UHFFFAOYSA-N
Formula:	C2HCl2F3
SMILES:	FC(Cl)C(F)(F)Cl
Mol. weight [g/mol]:	152.93
CAS:	354-23-4

Physical Properties

Property code	Value	Unit	Source
gf	-641.93	kJ/mol	Joback Method
hf	-718.45	kJ/mol	Joback Method
hfus	7.63	kJ/mol	Joback Method
hvap	26.80 ± 0.30	kJ/mol	NIST Webbook
ie	12.00	eV	NIST Webbook
log10ws	-2.24		Crippen Method
logp	2.352		Crippen Method
mcvol	68.830	ml/mol	McGowan Method
pc	3945.61	kPa	Joback Method
tb	301.00	K	NIST Webbook
tb	301.40 ± 1.00	K	NIST Webbook
tc	481.32	K	Joback Method
tf	161.33	K	Joback Method
vc	0.282	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	105.76	J/mol×K	314.16	Joback Method

cpg	110.87	J/mol×K	342.02	Joback Method
cpg	115.62	J/mol×K	369.88	Joback Method
cpg	120.03	J/mol×K	397.74	Joback Method
cpg	124.12	J/mol×K	425.60	Joback Method
cpg	127.90	J/mol×K	453.46	Joback Method
cpg	131.39	J/mol×K	481.32	Joback Method
hfust	7.08	kJ/mol	135.70	NIST Webbook

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.45917e+01
Coeff. B	-2.73466e+03
Coeff. C	-2.68040e+01
Temperature range (K), min.	217.98
Temperature range (K), max.	461.60

Sources

NIST Webbook: http://webbook.nist.gov/cgi/cbook.cgi?ID=C354234&Units=SI

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

Crippen Method: http://pubs.acs.org/doi/abs/10.1021/ci990307l

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

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

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

Legend

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

hfust:	Enthalpy of fusion at a given temperature
hvap:	Enthalpy of vaporization at standard conditions
ie:	Ionization energy
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume