Ethane, 2-chloro-1,1,1,2-tetrafluoro-

Other names:	1,1,1,2-tetrafluoro-2-chloroethane
	1-chloro-1,2,2,2-tetrafluoroethane
	2-Chloro-1,1,1,2-tetrafluoroethane
	CF3CHFCl
	CFC 124
	Freon 124
	R 124
	R-124
Inchi:	InChI=1S/C2HClF4/c3-1(4)2(5,6)7/h1H
InchiKey:	BOUGCJDAQLKBQH-UHFFFAOYSA-N
Formula:	C2HClF4
SMILES:	FC(Cl)C(F)(F)F
Mol. weight [g/mol]:	136.48
CAS:	2837-89-0

Physical Properties

Property code	Value	Unit	Source
gf	-824.81	kJ/mol	Joback Method
hf	-898.82	kJ/mol	Joback Method
hfus	6.52	kJ/mol	Joback Method
hvap	19.48	kJ/mol	Joback Method
log10ws	-1.94		Crippen Method
logp	2.083		Crippen Method
mcvol	58.360	ml/mol	McGowan Method
pc	3615.00 ± 5.00	kPa	NIST Webbook
rhoc	566.38 ± 5.46	kg/m3	NIST Webbook
tb	262.00	K	NIST Webbook
tc	395.35 ± 0.20	K	NIST Webbook
tf	132.00	K	Joback Method
vc	0.252	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source

cpg	92.98	J/mol×K	276.00	Joback Method
cpg	98.08	J/mol×K	300.42	Joback Method
cpg	102.89	J/mol×K	324.85	Joback Method
cpg	107.43	J/mol×K	349.27	Joback Method
cpg	111.69	J/mol×K	373.70	Joback Method
cpg	115.70	J/mol×K	398.12	Joback Method
cpg	119.46	J/mol×K	422.54	Joback Method
pvap	594.00	kPa	313.15	Vapor liquid equilibria of the carbon dioxide (CO2) + 2,2-dichloro-1,1,1-trifluoroethane (R123) system and carbon dioxide (CO2) + 1-chloro-1,2,2,2-tetrafluoroethane (R124) system
pvap	776.00	kPa	323.15	Vapor liquid equilibria of the carbon dioxide (CO2) + 2,2-dichloro-1,1,1-trifluoroethane (R123) system and carbon dioxide (CO2) + 1-chloro-1,2,2,2-tetrafluoroethane (R124) system
pvap	1045.00	kPa	333.15	Vapor liquid equilibria of the carbon dioxide (CO2) + 2,2-dichloro-1,1,1-trifluoroethane (R123) system and carbon dioxide (CO2) + 1-chloro-1,2,2,2-tetrafluoroethane (R124) system

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.36550e+01
Coeff. B	-1.97920e+03
Coeff. C	-4.21720e+01
Temperature range (K), min.	190.23
Temperature range (K), max.	395.43

Sources

Measurement and Correlation of Vapor-Liquid Equilibrium for R124 (1-Chloro-1,2,2,2-Tetrafluoroethane)-NMP (N-Methyl-2-Pyrrolidone) and R124-DMF (N,N-Dimethylformamide) Mixtures:	https://www.doi.org/10.1021/acs.jced.7b00444
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C2837890&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
Vapor liquid equilibria of the carbon dioxide (CO2) + 2,2-dichloro-1,1,1-trifluoroethane (R123) system and carbon dioxide (CO2) + 1-chloro-1,2,2,2-tetrafluoroethane (R124) system:	https://www.doi.org/10.1016/j.fluid.2006.10.021

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
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
pvap:	Vapor pressure
rhoc:	Critical density
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume