Ethane, 1-chloro-1,1-difluoro-

Other names: .alpha.-chloroethylidene difluoride
1,1-Difluoro-1-chloroethane
1-Chloro-1,1-Difluoroethane
ALPHA-CHLOROETHYLIDENE FLUORIDE
CFC 142b
CH3CF2Cl
Chloroethylidene fluoride
Dymel 142
F 142b
FC 142b
FREON 142B
Fluorocarbon FC142b
Freon 142
Genetron 101
Genetron 142b
Gentron 142B
HCFC 142b
Hydrochlorofluorocarbon 142b
Propellant 142b
R 142b
R-142b
REFRIGERANT-142B
UN 2517
«alpha»-Chloroethylidene fluoride
Â«alphaÂ»-Chloroethylidene fluoride

Inchi: InChI=1S/C2H3ClF2/c1-2(3,4)5/h1H3
InchiKey: BHNZEZWIUMJCGF-UHFFFAOYSA-N
Formula: C2H3ClF2
SMILES: CC(F)(F)Cl
Mol. weight [g/mol]: 100.50
CAS: 75-68-3

Physical Properties

Property code	Value	Unit	Source
af	0.2510		KDB
dm	2.10	debye	KDB

gf	-432.75	kJ/mol	Joback Method
hf	-501.32	kJ/mol	Joback Method
hfus	3.88	kJ/mol	Joback Method
hvap	21.50	kJ/mol	Joback Method
ie	11.98 ± 0.01	eV	NIST Webbook
ie	12.50	eV	NIST Webbook
log10ws	-1.62		Crippen Method
logp	1.838		Crippen Method
mcvol	54.820	ml/mol	McGowan Method
pc	4053.00 ± 5.00	kPa	NIST Webbook
pc	4048.00 ± 6.00	kPa	NIST Webbook
pc	4054.00	kPa	Critical Parameters and Vapor Pressures Measurements of Hydrofluoroethers at High Temperatures
pc	4041.00	kPa	KDB
pc	4123.05 ± 103.42	kPa	NIST Webbook
pc	4331.64 ± 25.00	kPa	NIST Webbook
pc	4041.00 ± 3.00	kPa	NIST Webbook
pt	5.00e-03 ± 2.00e-03	kPa	NIST Webbook
rhoc	449.21 ± 11.05	kg/m3	NIST Webbook
rhoc	444.19 ± 4.02	kg/m3	NIST Webbook
rhoc	446.20 ± 5.02	kg/m3	NIST Webbook
rhoc	446.20 ± 5.02	kg/m3	NIST Webbook
rhoc	425.70 ± 4.02	kg/m3	NIST Webbook
rinpol	402.00		NIST Webbook
rinpol	402.00		NIST Webbook
rinpol	346.00		NIST Webbook
rinpol	346.00		NIST Webbook
tb	263.55 ± 0.60	K	NIST Webbook
tb	263.20	K	NIST Webbook
tb	263.40	K	KDB
tc	410.29	K	KDB
tf	142.30	K	KDB
tt	142.71 ± 0.01	K	NIST Webbook
tt	142.40 ± 0.20	K	NIST Webbook
vc	0.225	m3/kmol	KDB
zc	0.2665290		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source

cpg	96.52	J/mol×K	385.42	Joback Method
cpg	100.62	J/mol×K	412.30	Joback Method
cpg	77.25	J/mol×K	277.90	Joback Method
cpg	82.52	J/mol×K	304.78	Joback Method
cpg	87.48	J/mol×K	331.66	Joback Method
cpg	92.14	J/mol×K	358.54	Joback Method
cpg	104.47	J/mol×K	439.18	Joback Method
cpl	130.50	J/mol×K	291.60	NIST Webbook
cpl	130.50	J/mol×K	291.60	NIST Webbook
cpl	132.15	J/mol×K	300.00	NIST Webbook
cpl	130.50	J/mol×K	294.90	NIST Webbook
cpl	130.50	J/mol×K	294.80	NIST Webbook
hfust	2.69	kJ/mol	142.40	NIST Webbook
hfust	2.69	kJ/mol	142.40	NIST Webbook
hfust	2.69	kJ/mol	142.40	NIST Webbook
hfust	2.69	kJ/mol	142.40	NIST Webbook
hvapt	19.20	kJ/mol	313.00	NIST Webbook
hvapt	15.40	kJ/mol	353.00	NIST Webbook
hvapt	24.20	kJ/mol	255.00	NIST Webbook
hvapt	22.70	kJ/mol	319.00	NIST Webbook
hvapt	24.00	kJ/mol	233.00	NIST Webbook
hvapt	21.90	kJ/mol	273.00	NIST Webbook
rhol	1100.01	kg/m3	303.00	KDB
sfust	18.86	J/mol×K	142.40	NIST Webbook
sfust	18.86	J/mol×K	142.40	NIST Webbook

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.42744e+01
Coeff. B	-2.23004e+03
Coeff. C	-3.22510e+01
Temperature range (K), min.	191.69
Temperature range (K), max.	410.26

Information	Value
Property code	pvap

Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	3.80464e+01
Coeff. B	-3.61663e+03
Coeff. C	-3.58538e+00
Coeff. D	3.74055e-06
Temperature range (K), min.	142.35
Temperature range (K), max.	410.20

Sources

Viscosity of Gaseous Mixtures of HCFC-22 + HCFC-142b at Pressures to 6.3 MPa:	https://www.doi.org/10.1007/s10765-009-0579-1
KDB Pure (Korean Thermophysical Properties Databank):	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1565
KDB:	https://www.cheric.org/files/research/kdb/mol/mol1565.mol
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C75683&Units=SI
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Critical Parameters and Vapor Pressures Measurements of Hydrofluoroethers at High Temperatures:	https://www.doi.org/10.1021/je0201976
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
KDB Vapor Pressure Data:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1565

Legend

af:	Acentric Factor
cpg:	Ideal gas heat capacity
cpl:	Liquid phase heat capacity
dm:	Dipole Moment
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
hvapt:	Enthalpy of vaporization at a given temperature
ie:	Ionization energy
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume

pc:	Critical Pressure
pt:	Triple Point Pressure
pvap:	Vapor pressure
rhoc:	Critical density
rhol:	Liquid Density
rinpol:	Non-polar retention indices
sfust:	Entropy of fusion at a given temperature
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume
zc:	Critical Compressibility

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