Fluorodichloromethane

Other names:	ARCTON 7
	Algofrene Type 5
	CHCl2F
	CHFCl2
	Dichlorofluoromethane
	Dichloromonofluoromethane
	Dwuchlorofluorometan
	F 21
	FC 21
	Fluorocarbon-21
	Freon 21
	Freon F 21
	Genetron 21
	Halon 112
	Methane, dichlorofluoro-
	Monofluorodichloromethane
	R 21
	R 21 (refrigerant)
	REFRIGERANT-21
	Refrigerant 21
	UN 1029
Inchi:	InChI=1S/CHCl2F/c2-1(3)4/h1H
InchiKey:	UMNKXPULIDJLSU-UHFFFAOYSA-N
Formula:	CHCl2F
SMILES:	FC(Cl)Cl
Mol. weight [g/mol]:	102.92
CAS:	75-43-4

Physical Properties

Property code	Value	Unit	Source
af	0.2100		KDB
dm	1.30	debye	KDB
gf	-268.40	kJ/mol	KDB
hf	-298.90	kJ/mol	KDB
hfus	6.30	kJ/mol	Joback Method
hvap	25.39	kJ/mol	Joback Method

ie	11.75 ± 0.02	eV	NIST Webbook
ie	11.50	eV	NIST Webbook
ie	12.39 ± 0.20	eV	NIST Webbook
ie	11.92	eV	NIST Webbook
ie	12.00	eV	NIST Webbook
log10ws	-1.50		Crippen Method
logp	1.717		Crippen Method
mcvol	51.200	ml/mol	McGowan Method
pc	5180.00	kPa	KDB
rhoc	521.82 ± 2.06	kg/m3	NIST Webbook
rinpol	462.00		NIST Webbook
rinpol	491.00		NIST Webbook
tb	282.00	K	NIST Webbook
tb	282.10	K	KDB
tc	451.65 ± 0.40	K	NIST Webbook
tc	451.58	K	KDB
tf	138.00	K	KDB
vc	0.196	m3/kmol	KDB
zc	0.2704050		KDB
zra	0.27		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	73.94	J/mol×K	441.79	Joback Method
cpg	63.32	J/mol×K	295.97	Joback Method
cpg	65.67	J/mol×K	325.13	Joback Method
cpg	67.90	J/mol×K	354.30	Joback Method
cpg	70.02	J/mol×K	383.46	Joback Method
cpg	72.03	J/mol×K	412.62	Joback Method
cpg	75.74	J/mol×K	470.95	Joback Method
cpl	112.60	J/mol×K	298.15	NIST Webbook
hvapt	36.70	kJ/mol	280.50	NIST Webbook
hvapt	24.94	kJ/mol	282.10	KDB
hvapt	26.10	kJ/mol	253.50	NIST Webbook
hvapt	25.30	kJ/mol	311.50	NIST Webbook
hvapt	24.20	kJ/mol	370.00	NIST Webbook
hvapt	24.10	kJ/mol	423.50	NIST Webbook
hvapt	26.20	kJ/mol	231.50	NIST Webbook
rhol	1380.00	kg/m3	282.00	KDB
srf	0.02	N/m	273.20	KDB

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.42093e+01
Coeff. B	-2.35048e+03
Coeff. C	-3.69280e+01
Temperature range (K), min.	205.76
Temperature range (K), max.	451.58

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	1.43707e+01
Coeff. B	-3.31624e+03
Coeff. C	4.15152e-01
Coeff. D	-5.14720e-06
Temperature range (K), min.	138.15
Temperature range (K), max.	451.58

Sources

Crippen Method: https://www.chemeo.com/doc/models/crippen_log10ws

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

KDB: https://www.cheric.org/files/research/kdb/mol/mol1517.mol

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

NIST Webbook: http://webbook.nist.gov/cgi/cbook.cgi?ID=C75434&Units=SI

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=1517

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

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
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
pvap:	Vapor pressure
rhoc:	Critical density
rhol:	Liquid Density
rinpol:	Non-polar retention indices
srf:	Surface Tension
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume
zc:	Critical Compressibility
zra:	Rackett Parameter