1,1,1,2,2-Pentafluoropropane

Other names:	E-245
	HFC 245cb
	R 245
	R-245cb
	propane, 1,1,1,2,2-pentafluoro-
Inchi:	InChI=1S/C3H3F5/c1-2(4,5)3(6,7)8/h1H3
InchiKey:	FDOPVENYMZRARC-UHFFFAOYSA-N
Formula:	C3H3F5
SMILES:	CC(F)(F)C(F)(F)F
Mol. weight [g/mol]:	134.05
CAS:	1814-88-6

Physical Properties

Property code	Value	Unit	Source
af	0.3080		KDB
gf	-993.99	kJ/mol	Joback Method
hf	-1103.30	kJ/mol	Joback Method
hfus	4.10	kJ/mol	Joback Method
hvap	15.60	kJ/mol	Joback Method
log10ws	-2.05		Crippen Method
logp	2.204		Crippen Method
mcvol	61.980	ml/mol	McGowan Method
pc	3137.24 ± 3.44	kPa	NIST Webbook
pc	3137.00	kPa	KDB
rhoc	490.62 ± 0.97	kg/m3	NIST Webbook
tb	260.00	K	NIST Webbook
tb	254.90 ± 0.50	K	NIST Webbook
tb	255.71	K	KDB
tc	380.10 ± 0.11	K	NIST Webbook
tc	380.11	K	KDB
tf	131.36	K	Joback Method
vc	0.273	m3/kmol	KDB
zc	0.2709760		KDB

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	102.06	J/mol×K	257.93	Joback Method
cpg	136.06	J/mol×K	370.04	Joback Method
cpg	130.01	J/mol×K	347.62	Joback Method
cpg	123.60	J/mol×K	325.20	Joback Method
cpg	116.81	J/mol×K	302.77	Joback Method
cpg	109.64	J/mol×K	280.35	Joback Method
cpg	141.76	J/mol×K	392.46	Joback Method
hvapt	23.00	kJ/mol	306.00	NIST Webbook
hvapt	22.90	kJ/mol	257.50	NIST Webbook
pvap	708.20	kPa	313.15	Vapor-liquid equilibria of 2,3,3,3-tetrafluoropropene (HFO-1234yf) + 1,1,1,2,2-pentafluoropropane (HFC-245cb) system
pvap	537.80	kPa	303.15	Vapor-liquid equilibria of 2,3,3,3-tetrafluoropropene (HFO-1234yf) + 1,1,1,2,2-pentafluoropropane (HFC-245cb) system
pvap	398.80	kPa	293.15	Vapor-liquid equilibria of 2,3,3,3-tetrafluoropropene (HFO-1234yf) + 1,1,1,2,2-pentafluoropropane (HFC-245cb) system
pvap	290.10	kPa	283.15	Vapor-liquid equilibria of 2,3,3,3-tetrafluoropropene (HFO-1234yf) + 1,1,1,2,2-pentafluoropropane (HFC-245cb) system

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.36687e+01

Coeff. B	-1.85452e+03
Coeff. C	-4.99890e+01
Temperature range (K), min.	188.58
Temperature range (K), max.	271.90

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	9.07787e+01
Coeff. B	-5.29928e+03
Coeff. C	-1.20071e+01
Coeff. D	1.74073e-05
Temperature range (K), min.	232.15
Temperature range (K), max.	283.15

Sources

McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
KDB Vapor Pressure Data:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1583
Vapor-liquid equilibria of 2,3,3,3-tetrafluoropropene (HFO-1234yf) + 1,1,1,2,2-pentafluoropropane (HFC-245cb) system:	https://www.doi.org/10.1016/j.fluid.2016.07.031
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
KDB:	https://www.cheric.org/files/research/kdb/mol/mol1583.mol
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C1814886&Units=SI
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure

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
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume
zc:	Critical Compressibility

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