Cyclodecane

Inchi: InChI=1S/C10H20/c1-2-4-6-8-10-9-7-5-3-1/h1-10H2
InchiKey: LMGZGXSXHCMSAA-UHFFFAOYSA-N
Formula: C10H20
SMILES: C1CCCCCCCCC1
Mol. weight [g/mol]: 140.27
CAS: 293-96-9

Physical Properties

Property code	Value	Unit	Source
chl	-6586.20 ± 0.90	kJ/mol	NIST Webbook
chl	-6600.30 ± 6.30	kJ/mol	NIST Webbook
gf	17.08	kJ/mol	Joback Method
hf	-199.71	kJ/mol	Joback Method
hfus	4.02	kJ/mol	Joback Method
hvap	39.28	kJ/mol	Joback Method
ie	9.60	eV	NIST Webbook
ie	10.00 ± 0.05	eV	NIST Webbook
log10ws	-3.90		Crippen Method
logp	3.901		Crippen Method
mcvol	140.900	ml/mol	McGowan Method
pc	2953.69	kPa	Joback Method
rinpol	1128.00		NIST Webbook
rinpol	1177.40		NIST Webbook
rinpol	1133.90		NIST Webbook
rinpol	1128.70		NIST Webbook
rinpol	1131.20		NIST Webbook
rinpol	1147.00		NIST Webbook
rinpol	1179.00		NIST Webbook
rinpol	1147.00		NIST Webbook
rinpol	1198.00		NIST Webbook
rinpol	1127.00		NIST Webbook
rinpol	1156.00		NIST Webbook
rinpol	1128.00		NIST Webbook
rinpol	1147.00		NIST Webbook
rinpol	1198.00		NIST Webbook
rinpol	1127.00		NIST Webbook
rinpol	1141.00		NIST Webbook

ripol	1261.00		NIST Webbook
ripol	1271.00		NIST Webbook
ripol	1261.00		NIST Webbook
tb	474.00	K	NIST Webbook
tb	475.20	K	NIST Webbook
tb	474.00 ± 5.00	K	NIST Webbook
tc	700.22	K	Joback Method
tf	285.00 ± 1.00	K	NIST Webbook
vc	0.497	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	407.16	J/mol×K	661.77	Joback Method
cpg	424.80	J/mol×K	700.22	Joback Method
cpg	300.19	J/mol×K	469.50	Joback Method
cpg	324.11	J/mol×K	507.95	Joback Method
cpg	346.77	J/mol×K	546.41	Joback Method
cpg	368.15	J/mol×K	584.86	Joback Method
cpg	388.28	J/mol×K	623.32	Joback Method
dvisc	0.0002241	Pa×s	424.58	Joback Method
dvisc	0.0001282	Pa×s	469.50	Joback Method
dvisc	0.1570752	Pa×s	200.00	Joback Method
dvisc	0.0161987	Pa×s	244.92	Joback Method
dvisc	0.0033780	Pa×s	289.83	Joback Method
dvisc	0.0010728	Pa×s	334.75	Joback Method
dvisc	0.0004470	Pa×s	379.67	Joback Method
hfust	18.95	kJ/mol	282.70	NIST Webbook
hvapt	48.20	kJ/mol	364.50	NIST Webbook
hvapt	45.10	kJ/mol	446.50	NIST Webbook

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.47755e+01
Coeff. B	-4.02883e+03

Coeff. C	-6.83260e+01
Temperature range (K), min.	346.41
Temperature range (K), max.	494.02

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	1.04758e+02
Coeff. B	-9.84919e+03
Coeff. C	-1.31529e+01
Coeff. D	7.31120e-06
Temperature range (K), min.	343.15
Temperature range (K), max.	489.15

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=589
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C293969&Units=SI
Infinite dilution activity coefficients, specific retention volumes and solvation thermodynamics of hydrocarbons in C78H158 branched alkane solvent:	https://www.doi.org/10.1016/j.fluid.2006.07.015
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
KDB:	https://www.cheric.org/files/research/kdb/mol/mol589.mol

Legend

chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas heat capacity
dvisc:	Dynamic viscosity
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
pvap:	Vapor pressure
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume