Decane, 1-chloro-

Other names:	1-Chlorodecane
	Decyl chloride
	n-Decyl chloride
Inchi:	InChI=1S/C10H21Cl/c1-2-3-4-5-6-7-8-9-10-11/h2-10H2,1H3
InchiKey:	ZTEHOZMYMCEYRM-UHFFFAOYSA-N
Formula:	C10H21Cl
SMILES:	CCCCCCCCCCCl
Mol. weight [g/mol]:	176.73
CAS:	1002-69-3

Physical Properties

Property code	Value	Unit	Source
gf	21.39	kJ/mol	Joback Method
hf	-265.47	kJ/mol	Joback Method
hfus	25.85	kJ/mol	Joback Method
hvap	64.00 ± 0.20	kJ/mol	NIST Webbook
log10ws	-4.16		Crippen Method
logp	4.366		Crippen Method
mcvol	164.000	ml/mol	McGowan Method
pc	2038.23	kPa	Joback Method
rinpol	1275.00		NIST Webbook
rinpol	1263.00		NIST Webbook
rinpol	1257.00		NIST Webbook
rinpol	1256.00		NIST Webbook
rinpol	1261.00		NIST Webbook
rinpol	1255.00		NIST Webbook
rinpol	1257.00		NIST Webbook
rinpol	1249.60		NIST Webbook
rinpol	1275.00		NIST Webbook
rinpol	1254.00		NIST Webbook
rinpol	1249.60		NIST Webbook
rinpol	1264.00		NIST Webbook
ripol	1474.00		NIST Webbook
ripol	1452.00		NIST Webbook
ripol	1455.00		NIST Webbook
ripol	1459.00		NIST Webbook
ripol	1459.00		NIST Webbook

ripol	1452.00		NIST Webbook
ripol	1458.00		NIST Webbook
ripol	1469.00		NIST Webbook
ripol	1468.00		NIST Webbook
ripol	1470.00		NIST Webbook
ripol	1474.00		NIST Webbook
tb	496.60	K	NIST Webbook
tb	496.40 ± 1.50	K	NIST Webbook
tb	495.65 ± 1.50	K	NIST Webbook
tc	634.39	K	Joback Method
tf	232.38	K	Joback Method
vc	0.644	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	428.35	J/mol×K	634.39	Joback Method
cpg	363.27	J/mol×K	493.76	Joback Method
cpg	377.38	J/mol×K	521.88	Joback Method
cpg	390.94	J/mol×K	550.01	Joback Method
cpg	403.94	J/mol×K	578.14	Joback Method
cpg	416.41	J/mol×K	606.27	Joback Method
cpg	348.57	J/mol×K	465.63	Joback Method
cpl	336.61	J/mol×K	301.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis

cpl	337.47	J/mol×K	304.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	338.66	J/mol×K	306.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	339.83	J/mol×K	309.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	341.39	J/mol×K	311.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	342.42	J/mol×K	314.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	343.41	J/mol×K	316.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	345.04	J/mol×K	319.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	346.36	J/mol×K	321.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	346.99	J/mol×K	324.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	335.39	J/mol×K	299.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	350.01	J/mol×K	329.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	351.31	J/mol×K	331.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	352.76	J/mol×K	334.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	353.39	J/mol×K	336.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	355.52	J/mol×K	339.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	356.17	J/mol×K	341.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	357.74	J/mol×K	344.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	358.38	J/mol×K	346.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	359.65	J/mol×K	349.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	361.49	J/mol×K	351.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	362.49	J/mol×K	353.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	334.13	J/mol×K	296.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	333.14	J/mol×K	294.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	
cpl	332.01	J/mol×K	291.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis	

cpl	331.00	J/mol×K	289.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis
cpl	329.82	J/mol×K	286.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis
cpl	348.75	J/mol×K	326.65	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis
cpl	328.57	J/mol×K	284.15	Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 353.15 K. A group additivity and molecular connectivity analysis
dvisc	0.0004612	Pa×s	387.88	Joback Method
dvisc	0.0003301	Pa×s	426.75	Joback Method
dvisc	0.0053737	Pa×s	232.38	Joback Method
dvisc	0.0022338	Pa×s	271.25	Joback Method
dvisc	0.0011571	Pa×s	310.13	Joback Method
dvisc	0.0006940	Pa×s	349.00	Joback Method

dvisc	0.0002499	Pa×s	465.63	Joback Method
hvapt	54.40	kJ/mol	454.50	NIST Webbook
hvapt	56.20	kJ/mol	429.00	NIST Webbook
rhol	814.20	kg/m3	363.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	830.00	kg/m3	343.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	789.50	kg/m3	393.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	845.60	kg/m3	323.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	865.00	kg/m3	298.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	868.90	kg/m3	293.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	876.80	kg/m3	283.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	884.20	kg/m3	273.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K

rhol	892.30	kg/m3	263.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	899.90	kg/m3	253.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K
rhol	764.60	kg/m3	423.15	Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.58375e+01
Coeff. B	-4.67024e+03
Coeff. C	-7.98780e+01
Temperature range (K), min.	380.22
Temperature range (K), max.	523.56

Sources

McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C1002693&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
Heat Capacities of 1-chloroalkanes and 1-bromoalkanes within the temperature range from 284.15 K to 398.15 K. A group additivity and molecular connectivity analysis:	https://www.doi.org/10.1021/je049652j
Density of Some 1-Chloroalkanes within the Temperature Range from (253.15 to 423.15) K:	https://www.doi.org/10.1021/je700325c
Joback Method:	https://en.wikipedia.org/wiki/Joback_method

Legend

cpg:	Ideal gas heat capacity
cpl:	Liquid phase 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
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
rhol:	Liquid Density
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