Deuterium

Other names:	D2
	UN 1957
	deuterium, diatomic
Inchi:	InChI=1S/H2/h1H/i1+1D
InchiKey:	UFHFLCQGNIYNRP-VVKOMZTBSA-N
Formula:	D2
SMILES:	[H][H]
Mol. weight [g/mol]:	4.03
CAS:	7782-39-0

Physical Properties

Property code	Value	Unit	Source
gf	53.88	kJ/mol	Joback Method
hf	68.29	kJ/mol	Joback Method
hfus	-0.88	kJ/mol	Joback Method
hvap	15.30	kJ/mol	Joback Method
log10ws	0.18		Crippen Method
logp	0.246		Crippen Method
mcvol	10.860	ml/mol	McGowan Method
pc	7014.41	kPa	Joback Method
tb	198.00	K	Joback Method
tc	339.04	K	Joback Method
tf	122.50	K	Joback Method
vc	0.018	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	-10.08	J/mol×K	198.00	Joback Method
cpg	-4.12	J/mol×K	315.53	Joback Method
cpg	-4.82	J/mol×K	292.03	Joback Method
cpg	-5.74	J/mol×K	268.52	Joback Method
cpg	-6.92	J/mol×K	245.01	Joback Method
cpg	-8.36	J/mol×K	221.51	Joback Method

cpg	-3.65	J/mol×K	339.04	Joback Method
dvisc	0.0000013	Pa×s	198.00	Joback Method
dvisc	0.0000011	Pa×s	185.42	Joback Method
dvisc	0.0000009	Pa×s	172.83	Joback Method
dvisc	0.0000007	Pa×s	160.25	Joback Method
dvisc	0.0000005	Pa×s	147.67	Joback Method
dvisc	0.0000003	Pa×s	135.08	Joback Method
dvisc	0.0000002	Pa×s	122.50	Joback Method

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.25267e+01
Coeff. B	-2.12329e+02
Coeff. C	3.20000e+00
Temperature range (K), min.	18.73
Temperature range (K), max.	38.35

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	1.12815e+01
Coeff. B	-1.57895e+02
Coeff. C	-3.01247e-04
Coeff. D	1.05352e-07
Temperature range (K), min.	19.15
Temperature range (K), max.	25.15

Sources

Solubilities of gases in cycloethers. The solubility of 13 nonpolar gases in 2,5-dimethyltetrahydrofuran at 273.15 to 303.15 K and 101.32 kPa:	https://www.doi.org/10.1016/j.jct.2018.12.037
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7782390&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=1898
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws

Legend

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
hvap:	Enthalpy of vaporization at standard conditions
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
pvap:	Vapor pressure
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume