Phosphine

Other names:	Fosforowodor
	Gas-ex-B
	HYDROGEN PHOSPHIDE
	PH3
	PHOSPHOROUS TRIHYDRIDE
	Phosphene
	Phosphorus hydride
	Phosphorus trihydride
	Phosphorwasserstoff
	Rcra waste number P096
	Trihydrogen phosphide
	UN 2199
Inchi:	InChI=1S/H3P/h1H3
InchiKey:	XYFCBTPGUUZFHI-UHFFFAOYSA-N
Formula:	H3P
SMILES:	P
Mol. weight [g/mol]:	34.00
CAS:	7803-51-2

Physical Properties

Property code	Value	Unit	Source
af	0.0380		KDB
affp	785.00	kJ/mol	NIST Webbook
basg	750.90	kJ/mol	NIST Webbook
dm	0.60	debye	KDB
gf	25.41	kJ/mol	KDB
hf	22.90	kJ/mol	KDB
ie	9.87 ± 0.01	eV	NIST Webbook
ie	9.96	eV	NIST Webbook
ie	10.00	eV	NIST Webbook
ie	9.96	eV	NIST Webbook
ie	9.96 ± 0.01	eV	NIST Webbook
ie	10.13 ± 0.02	eV	NIST Webbook
ie	9.87 ± 0.00	eV	NIST Webbook
ie	10.28	eV	NIST Webbook
ie	10.05 ± 0.05	eV	NIST Webbook
ie	9.87 ± 0.00	eV	NIST Webbook

ie	10.30 ± 0.10	eV	NIST Webbook
ie	9.98	eV	NIST Webbook
ie	10.59	eV	NIST Webbook
ie	10.59 ± 0.05	eV	NIST Webbook
ie	9.97 ± 0.02	eV	NIST Webbook
ie	9.87 ± 0.01	eV	NIST Webbook
ie	10.10	eV	NIST Webbook
log10ws	3.76		Crippen Method
logp	0.058		Crippen Method
mcvol	31.320	ml/mol	McGowan Method
pc	6540.00	kPa	KDB
tb	185.40	K	KDB
tc	324.50	K	KDB
tf	140.00	K	KDB
tt	139.41 ± 0.20	K	NIST Webbook

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
hsubt	17.20	kJ/mol	134.50	NIST Webbook
hvapt	14.60 ± 0.10	kJ/mol	186.00	NIST Webbook
hvapt	14.60	kJ/mol	185.00	NIST Webbook
rhol	1529.00	kg/m3	298.00	KDB

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.40657e+01
Coeff. B	-1.66816e+03
Coeff. C	-8.84000e+00
Temperature range (K), min.	139.37
Temperature range (K), max.	324.75

Sources

Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
KDB:	https://www.cheric.org/files/research/kdb/mol/mol1921.mol
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C7803512&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

Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
dm:	Dipole Moment
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hsubt:	Enthalpy of sublimation at a given temperature
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
rhol:	Liquid Density
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature