1,2-Ethanediamine, N,N,N',N'-tetramethyl-

Other names: (CH3)2NCH2CH2N(CH3)2
1,2-Bis(dimethylamino)ethane
1,2-Di-(dimethylamino)ethane
1,2-Diaminoethane, N,N,N',N'-tetramethyl-
1,2-Ethanediamine, N1,N1,N2,N2-tetramethyl-
2,5-dimethyl-2,5-diazahexane
Dimethyl[2-(dimethylamino)ethyl]amine
Ethylenediamine, N,N,N',N'-tetramethyl-
N,N,N',N'-Tetramethyl-1,2-diaminoethane
N,N,N',N'-Tetramethyl-1,2-ethanediamine
N,N,N',N'-Tetramethylethanediamine
N,N,N',N'-Tetramethylethenediamine
N,N,N',N'-Tetramethylethylenediamine
N,N,N1,N1-Tetramethylethylenediamine
Propamine D
TMEDA
Temed
Tetrameen
Tetramethyl ethylene diamine
Tetramethyldiaminoethane
UN 2372

Inchi: InChI=1S/C6H16N2/c1-7(2)5-6-8(3)4/h5-6H2,1-4H3

InchiKey: KWYHDKDOAIKMQN-UHFFFAOYSA-N

Formula: C6H16N2

SMILES: CN(C)CCN(C)C

Mol. weight [g/mol]: 116.20

CAS: 110-18-9

Physical Properties

Property code	Value	Unit	Source
affp	1012.80	kJ/mol	NIST Webbook
basg	970.60	kJ/mol	NIST Webbook
gf	221.20	kJ/mol	Joback Method
hf	-32.11	kJ/mol	Joback Method
hfus	17.34	kJ/mol	Joback Method
hvap	42.20	kJ/mol	NIST Webbook

ie	7.61 ± 0.05	eV	NIST Webbook
ie	7.57 ± 0.03	eV	NIST Webbook
ie	7.59 ± 0.04	eV	NIST Webbook
log10ws	0.53		Crippen Method
logp	0.110		Crippen Method
mcvol	115.360	ml/mol	McGowan Method
pc	3093.29	kPa	Joback Method
rinpol	1095.00		NIST Webbook
rinpol	1052.00		NIST Webbook
rinpol	1065.00		NIST Webbook
ripol	979.00		NIST Webbook
ripol	1015.00		NIST Webbook
ripol	988.00		NIST Webbook
ripol	1028.00		NIST Webbook
ripol	1050.00		NIST Webbook
ripol	999.00		NIST Webbook
tb	394.20	K	NIST Webbook
tc	523.14	K	Joback Method
tf	214.50 ± 0.60	K	NIST Webbook
vc	0.407	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	259.37	J/mol×K	469.28	Joback Method
cpg	247.93	J/mol×K	442.35	Joback Method
cpg	280.79	J/mol×K	523.14	Joback Method
cpg	270.31	J/mol×K	496.21	Joback Method
cpg	210.52	J/mol×K	361.56	Joback Method
cpg	223.52	J/mol×K	388.49	Joback Method
cpg	235.99	J/mol×K	415.42	Joback Method
hvapt	39.80	kJ/mol	330.00	NIST Webbook
pvap	12.53	kPa	334.99	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K

pvap	19.34	kPa	344.96	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
pvap	28.12	kPa	354.98	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
pvap	40.04	kPa	364.97	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
pvap	1.77	kPa	294.75	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
pvap	3.06	kPa	304.74	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
pvap	5.05	kPa	314.76	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K

pvap	8.12	kPa	324.95	Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 364.97K
rhol	750.30	kg/m3	323.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	762.90	kg/m3	308.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	759.10	kg/m3	313.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	754.70	kg/m3	318.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	767.30	kg/m3	303.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
tcondl	0.14	W/m×K	333.15	Liquid Thermal Conductivities of Acetonitrile, Diethyl Sulfide, Hexamethyleneimine, Tetrahydrothiophene, and Tetramethylethylenediamine
tcondl	0.14	W/m×K	313.15	Liquid Thermal Conductivities of Acetonitrile, Diethyl Sulfide, Hexamethyleneimine, Tetrahydrothiophene, and Tetramethylethylenediamine

tcondl	0.15	W/m×K	293.15	Liquid Thermal Conductivities of Acetonitrile, Diethyl Sulfide, Hexamethyleneimine, Tetrahydrothiophene, and Tetramethylethylenediamine
tcondl	0.15	W/m×K	273.15	Liquid Thermal Conductivities of Acetonitrile, Diethyl Sulfide, Hexamethyleneimine, Tetrahydrothiophene, and Tetramethylethylenediamine

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.56417e+01
Coeff. B	-3.78626e+03
Coeff. C	-5.07240e+01
Temperature range (K), min.	297.32
Temperature range (K), max.	417.25

Sources

Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents:	https://www.doi.org/10.1016/j.fluid.2013.11.028
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C110189&Units=SI
Experimental vapor pressures of 1,2-bis(dimethylamino)ethane, 1-methylmorpholine, 1,2-bis(2-aminoethoxy)ethane and N-benzylethanolamine between 273.18 and 384.97K:	https://www.doi.org/10.1016/j.fluid.2009.04.006
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
CO2 Solubility Measurements and Modeling for Tertiary Diamines:	https://www.doi.org/10.1021/je500927h
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Liquid Thermal Conductivities of Acetonitrile, Diethyl Sulfide, Hexamethyleneimine, Tetrahydrothiophene, and Tetramethylethylenediamine:	https://www.doi.org/10.1021/je0498661

Legend

affp:	Proton affinity
basg:	Gas basicity
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
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
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tcondl:	Liquid thermal conductivity
tf:	Normal melting (fusion) point
vc:	Critical Volume