N-Methyl-1,3-propanediamine

Other names:	(3-Aminopropyl)methylamine
	1,3-Propanediamine, N1-methyl-
	1,3-propanediamine, N-methyl-
	1-Amino-3-(methylamino)propane
	3-Methylaminopropylamine
	3-amino-1-(methylamino)propane
	N-methyl-1,3-diaminopropane
	N-methyl-1,3-propylenediamine
	N-methyltrimethylenediamine
	NSC 8160
Inchi:	InChI=1S/C4H12N2/c1-6-4-2-3-5/h6H,2-5H2,1H3
InchiKey:	QHJABUZHRJTCAR-UHFFFAOYSA-N
Formula:	C4H12N2
SMILES:	CNCCCN
Mol. weight [g/mol]:	88.15

Physical Properties

Property code	Value	Unit	Source
chl	-3208.90 ± 1.70	kJ/mol	NIST Webbook
hf	-43.38	kJ/mol	Cheméo Relay (1.0)
hfl	-80.20 ± 1.70	kJ/mol	NIST Webbook
hfus	16.41	kJ/mol	Joback Method
hvap	45.95	kJ/mol	Cheméo Relay (1.0)
logp	-0.445		Crippen Method
mcvol	87.180	ml/mol	McGowan Method
pc	4260.71	kPa	Joback Method
tb	413.20	K	NIST Webbook
tc	599.98	K	Cheméo Relay (1.0)
tf	233.26	K	Cheméo Relay (1.0)

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	194.44	J/mol×K	475.94	Joback Method

cpg	175.61	J/mol×K	413.62	Joback Method
cpg	185.23	J/mol×K	444.78	Joback Method
cpg	227.44	J/mol×K	600.57	Joback Method
cpg	219.74	J/mol×K	569.41	Joback Method
cpg	211.69	J/mol×K	538.25	Joback Method
cpg	203.25	J/mol×K	507.09	Joback Method
cpl	250.20	J/mol×K	353.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	243.50	J/mol×K	303.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	248.50	J/mol×K	348.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	247.70	J/mol×K	343.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	246.60	J/mol×K	338.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine

cpl	246.00	J/mol×K	333.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	245.40	J/mol×K	328.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	245.10	J/mol×K	323.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	244.60	J/mol×K	318.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	244.40	J/mol×K	313.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine
cpl	244.30	J/mol×K	308.15	Molar heat capacities of diethylenetriamine and 3-(methylamino)propylamine, their aqueous binaries, and aqueous ternaries with piperazine

hvapt	53.10	kJ/mol	298.15	Vapor pressure and enthalpy of vaporization of aliphatic propanediamines
hvapt	45.90	kJ/mol	370.00	NIST Webbook
pvap	53.96	kPa	392.92	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	38.34	kPa	382.84	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	53.96	kPa	392.95	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	73.40	kPa	402.59	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	73.40	kPa	402.59	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	73.41	kPa	402.61	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	129.80	kPa	422.46	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	129.79	kPa	422.46	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	129.84	kPa	422.51	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	169.97	kPa	432.40	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	170.02	kPa	432.40	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.09	kPa	273.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	0.20	kPa	283.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.43	kPa	293.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.85	kPa	303.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	1.59	kPa	313.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	2.81	kPa	323.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	4.75	kPa	333.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	7.72	kPa	343.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	12.08	kPa	353.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	18.31	kPa	363.15	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	3.46	kPa	326.81	Ebulliometric Determination of Vapor
pvap	4.47	kPa	331.62	Ebulliometric Determination of Vapor
pvap	5.97	kPa	337.36	Ebulliometric Determination of Vapor
pvap	7.97	kPa	343.91	Ebulliometric Determination of Vapor

pvap	12.48	kPa	353.78	Ebulliometric Determination of Vapor
pvap	20.47	kPa	365.76	Ebulliometric Determination of Vapor
pvap	27.96	kPa	372.77	Ebulliometric Determination of Vapor
pvap	39.97	kPa	383.53	Ebulliometric Determination of Vapor
pvap	64.98	kPa	397.99	Ebulliometric Determination of Vapor
pvap	79.98	kPa	404.70	Ebulliometric Determination of Vapor
pvap	101.27	kPa	412.50	Ebulliometric Determination of Vapor
pvap	38.35	kPa	382.87	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.09	kPa	273.00	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	26.61	kPa	372.76	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	26.61	kPa	372.74	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	18.11	kPa	362.84	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	18.10	kPa	362.82	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	12.14	kPa	353.24	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	11.85	kPa	352.54	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	11.85	kPa	352.54	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	7.74	kPa	343.30	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	7.74	kPa	343.28	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	7.75	kPa	343.26	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	4.76	kPa	333.25	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	4.76	kPa	333.23	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	2.83	kPa	323.26	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	2.83	kPa	323.26	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	1.61	kPa	313.18	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K

pvap	0.86	kPa	303.11	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.20	kPa	283.37	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
pvap	0.43	kPa	293.47	Phase equilibrium measurements and thermodynamic modeling of aqueous solutions of polyamines CO2 absorbents: 3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl 1,3-propanediamine at temperatures from 273 K to 363 K
rhol	842.69	kg/m3	303.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K

rhol	806.37	kg/m3	343.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	831.50	kg/m3	323.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	848.00	kg/m3	298.15	Study of CO2 Absorption into Phase Change Solvents MAPA and DEEA
rhol	860.46	kg/m3	283.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	851.61	kg/m3	293.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	835.90	kg/m3	318.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents

rhol	824.67	kg/m3	323.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	840.30	kg/m3	313.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	815.56	kg/m3	333.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	833.72	kg/m3	313.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	797.09	kg/m3	353.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K

rhol	787.72	kg/m3	363.15	Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K
rhol	844.70	kg/m3	308.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents
rhol	849.10	kg/m3	303.15	Mutual diffusion coefficients, density, and viscosity of aqueoussolutions of new polyamine CO2absorbents

Sources

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Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Freezing Point Depressions of Phase Change CO2 Solvents:	https://www.doi.org/10.1021/je3013167
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Study of CO2 Absorption into Phase Change Solvents MAPA and DEEA:	https://www.doi.org/10.1021/acs.jced.6b01038
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3-aminopropylmethylamine, 3-aminopropyldimethylamine and N,N-diethyl-1,3-propanediamine at temperatures from 273 K to 363 K:	https://www.doi.org/10.1016/j.jct.2011.09.012
Density, viscosity, and N2O solubility of aqueous amino acid salt and amine amino acid salt solutions:	http://link.springer.com/article/10.1007/BF02311772
Volumetric Properties of Binary Mixtures of 3-(Methylamino)propylamine with Water, N-Methyldiethanolamine, N,N-Dimethylethanolamine, and N,N-Diethylethanolamine from (283.15 to 363.15) K	https://www.doi.org/10.1021/je400679k
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Equilibrium Determination of Vapor-Liquid Equilibrium Total Pressure and CO2 Solubility in Binary and Ternary Aqueous Solutions of 3-(Methylamino)propylamine (MAPA) with Piperazine:	https://www.doi.org/10.1021/je800290k
Equilibrium Total Pressure and CO2 Solubility in Binary and Ternary Aqueous Solutions of 3-(Methylamino)propylamine (MAPA) with Piperazine:	https://www.doi.org/10.1021/je400886w
Mutual diffusion coefficients, density, and viscosity of aqueous solutions of 3-(Methylamino)propylamine (MAPA):	https://www.doi.org/10.1016/j.fluid.2013.11.028
Vapour-liquid equilibrium study of tertiary amines, single and in blend with 3-(methylamino)propylamine, for post-combustion CO2 capture:	https://www.doi.org/10.1016/j.jct.2019.06.017
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l

Legend

chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas heat capacity
cpl:	Liquid phase heat capacity
hf:	Enthalpy of formation at standard conditions
hfl:	Liquid phase 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
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