

1,4-Butanediamine

Other names:	1,4-Butylenediamine
	1,4-Diamino-n-butane
	1,4-Diaminobutane
	1,4-Tetramethylenediamine
	Butylenediamine
	H2N(CH2)4NH2
	NSC 60545
	Putrescin
	Putrescine
	Tetramethyldiamine
	Tetramethylenediamine
Inchi:	InChI=1S/C4H12N2/c5-3-1-2-4-6/h1-6H2
InchiKey:	KIDHWZJUCRJVML-UHFFFAOYSA-N
Formula:	C4H12N2
SMILES:	NCCCCN
Mol. weight [g/mol]:	88.15
CAS:	110-60-1

Physical Properties

Property code	Value	Unit	Source
affp	993.00 ± 4.00	kJ/mol	NIST Webbook
affp	977.40	kJ/mol	NIST Webbook
affp	982.30	kJ/mol	NIST Webbook
affp	1005.60 ± 6.70	kJ/mol	NIST Webbook
affp	1005.60	kJ/mol	NIST Webbook
affp	1010.00	kJ/mol	NIST Webbook
affp	991.60 ± 0.20	kJ/mol	NIST Webbook
affp	999.10	kJ/mol	NIST Webbook
basg	954.30	kJ/mol	NIST Webbook
basg	960.80 ± 0.20	kJ/mol	NIST Webbook
basg	944.50	kJ/mol	NIST Webbook
basg	951.10	kJ/mol	NIST Webbook
ep	-83.00	J/mol×K	NIST Webbook
gf	115.70	kJ/mol	Joback Method
hf	-58.31	kJ/mol	Joback Method

hfus	54.37	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.07	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.85	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.86	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	54.37	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.35	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.35	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.35	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	51.84	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.36	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.79	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.36	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.43	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.86	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	53.86	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines

hfus	54.15	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	54.51	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	55.05	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	54.87	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	54.87	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	54.87	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hfus	52.72	kJ/mol	Vapor pressure and enthalpy of vaporization of linear aliphatic alkanediamines
hvap	45.78	kJ/mol	Joback Method
log10ws	-0.37		Crippen Method
logp	-0.316		Crippen Method
mcvol	87.180	ml/mol	McGowan Method
pc	4540.00	kPa	Critical Pressures and Temperatures of n-Diaminoalkanes (C2 to C12)
rinpol	930.00		NIST Webbook
rinpol	930.00		NIST Webbook
rinpol	930.00		NIST Webbook
rinpol	930.00		NIST Webbook
ripol	1434.00		NIST Webbook
tb	431.70	K	NIST Webbook
tc	633.30	K	Joback Method
tf	301.36	K	Joback Method
vc	0.318	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
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cpg	185.04	J/mol×K	435.98	Joback Method
cpg	235.99	J/mol×K	633.30	Joback Method
cpg	228.49	J/mol×K	600.41	Joback Method
cpg	220.61	J/mol×K	567.53	Joback Method
cpg	212.34	J/mol×K	534.64	Joback Method
cpg	203.66	J/mol×K	501.75	Joback Method
cpg	194.56	J/mol×K	468.87	Joback Method
cpl	240.15	J/mol×K	333.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	241.32	J/mol×K	342.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	241.11	J/mol×K	341.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	240.91	J/mol×K	339.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	240.71	J/mol×K	338.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	240.52	J/mol×K	336.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	241.53	J/mol×K	344.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	241.74	J/mol×K	345.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	241.97	J/mol×K	347.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	242.20	J/mol×K	348.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	242.43	J/mol×K	350.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	242.68	J/mol×K	351.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	242.93	J/mol×K	353.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	235.40	J/mol×K	303.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	235.50	J/mol×K	308.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	236.70	J/mol×K	313.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	237.30	J/mol×K	318.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	238.80	J/mol×K	323.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	239.70	J/mol×K	328.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	241.00	J/mol×K	333.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends

cpl	242.30	J/mol×K	338.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	243.50	J/mol×K	343.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	244.40	J/mol×K	348.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends
cpl	240.34	J/mol×K	335.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	236.33	J/mol×K	298.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	236.45	J/mol×K	299.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	236.61	J/mol×K	300.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	236.77	J/mol×K	302.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	236.94	J/mol×K	303.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	237.09	J/mol×K	305.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	237.25	J/mol×K	306.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	237.41	J/mol×K	308.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	237.56	J/mol×K	309.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	237.72	J/mol×K	311.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	237.87	J/mol×K	312.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.03	J/mol×K	314.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.18	J/mol×K	315.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.34	J/mol×K	317.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.49	J/mol×K	318.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.65	J/mol×K	320.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	238.81	J/mol×K	321.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	238.97	J/mol×K	323.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.13	J/mol×K	324.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.29	J/mol×K	326.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.46	J/mol×K	327.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.63	J/mol×K	329.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.80	J/mol×K	330.65	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K
cpl	239.98	J/mol×K	332.15	Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between (293.15 and 353.15) K

cpl	246.50	J/mol×K	353.20	Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine blends	
hfust	28.06	kJ/mol	295.10	NIST Webbook	
psub	0.17	kPa	298.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.17	kPa	298.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.13	kPa	295.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.13	kPa	295.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.13	kPa	295.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.09	kPa	293.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.09	kPa	293.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	

psub	5.00e-04	kPa	255.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.09	kPa	293.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.07	kPa	290.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.07	kPa	290.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.05	kPa	288.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.17	kPa	298.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	5.00e-04	kPa	255.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	5.00e-04	kPa	255.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.05	kPa	288.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties

psub	7.70e-04	kPa	258.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	7.70e-04	kPa	258.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	7.70e-04	kPa	258.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	1.15e-03	kPa	260.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	1.16e-03	kPa	260.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	1.14e-03	kPa	260.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	1.68e-03	kPa	263.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	1.69e-03	kPa	263.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	

psub	1.69e-03	kPa	263.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	2.38e-03	kPa	265.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	2.37e-03	kPa	265.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	2.35e-03	kPa	265.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	3.48e-03	kPa	268.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	3.49e-03	kPa	268.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	3.49e-03	kPa	268.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	0.03	kPa	283.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	
psub	4.78e-03	kPa	270.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties	

psub	4.77e-03	kPa	270.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	6.85e-03	kPa	273.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	6.84e-03	kPa	273.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	6.83e-03	kPa	273.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	9.72e-03	kPa	275.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	9.75e-03	kPa	275.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	9.76e-03	kPa	275.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.01	kPa	278.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties

psub	0.01	kPa	278.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.01	kPa	278.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.02	kPa	280.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.02	kPa	280.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.02	kPa	280.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.03	kPa	283.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.03	kPa	283.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	4.80e-03	kPa	270.65	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties
psub	0.05	kPa	288.15	Thermodynamic study of alkane-alpha,omega-diamines - Evidence of odd-even pattern of sublimation properties

pvap	0.13	kPa	284.92	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	0.13	kPa	284.92	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	0.13	kPa	284.92	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	0.54	kPa	312.83	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures

pvap	1.28	kPa	332.86	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	2.69	kPa	352.87	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	2.69	kPa	352.87	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	3.81	kPa	362.86	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	3.79	kPa	362.86	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures

pvap	3.80	kPa	362.86	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	3.80	kPa	362.88	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	3.81	kPa	362.90	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures
pvap	1.70	kPa	342.85	Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures

Correlations

Information	Value
Property code	pvap

Equation	$\ln(P_{vp}) = A + B/(T + C)$
Coeff. A	1.56618e+01
Coeff. B	-4.09217e+03
Coeff. C	-6.11490e+01
Temperature range (K), min.	300.65
Temperature range (K), max.	456.52

Sources

Solubility of N2O in Density and Viscosity of Aqueous Solutions of 1,4-bis(methylamino)-2,2-(diethylamino)-ethanol, and Their Mixtures from 298.15 to 333.15) K: Thermodynamic study of alkane-alpha,omega-diamines - Critical Pressures and Temperatures of n-Diaminoalkanes (C2 to C12): KDB:

<https://www.doi.org/10.1021/je301371p>

https://www.chemeo.com/doc/models/crippen_log10ws

<https://www.doi.org/10.1016/j.fluid.2014.03.013>

<https://www.doi.org/10.1021/je050424e>

<https://www.cheric.org/files/research/kdb/mol/mol1414.mol>

Molar heat capacity of aqueous solutions of 1,3-diaminopropane and 1,4-diaminobutane and their piperazine Pressure: Joback Method:

<https://www.doi.org/10.1016/j.tca.2015.08.003>

<https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure>

https://en.wikipedia.org/wiki/Joback_method

NIST Webbook:

<http://webbook.nist.gov/cgi/cbook.cgi?ID=C110601&Units=SI>

Vapor pressure and enthalpy of vaporization of linear aliphatic diamines: Quinacrine Method:

<https://www.doi.org/10.1016/j.jct.2011.06.008>

<http://pubs.acs.org/doi/abs/10.1021/ci990307l>

Heat Capacities of Some Liquid a,?-Alkanediamines in the Temperature Range between 293.15 and 353.15) K: NIST Webbook:

<https://www.doi.org/10.1021/je900537y>

<http://link.springer.com/article/10.1007/BF02311772>

Phase equilibrium properties of binary aqueous solutions containing ethanediamine, 1,2-diaminopropane, 1,3-diaminopropane, or 1,4-diaminobutane at several temperatures

<https://www.doi.org/10.1016/j.jct.2010.12.010>

Legend

affp:	Proton affinity
basg:	Gas basicity
cpg:	Ideal gas heat capacity
cpl:	Liquid phase heat capacity
ep:	Protonation entropy at 298K
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hfust:	Enthalpy of fusion at a given temperature
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
psub:	Sublimation pressure
pvap:	Vapor pressure
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

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