

1-Propanamine, N-propyl-

Other names:	(n-C3H7)2NH DIPROPYLAMINE Di-n-propylamine N-DIPROPYLAMINE N-Propyl-1-propanamine N-Propyl-propylamine Rcra waste number U110 UN 2383
Inchi:	InChI=1S/C6H15N/c1-3-5-7-6-4-2/h7H,3-6H2,1-2H3
InchiKey:	WEHWNAOGRSTTBQ-UHFFFAOYSA-N
Formula:	C6H15N
SMILES:	CCCNC(C)C
Mol. weight [g/mol]:	101.19
CAS:	142-84-7

Physical Properties

Property code	Value	Unit	Source
af	0.4710		KDB
affp	962.30	kJ/mol	NIST Webbook
basg	929.30	kJ/mol	NIST Webbook
chl	-4348.68 ± 0.42	kJ/mol	NIST Webbook
chl	-4350.20 ± 1.30	kJ/mol	NIST Webbook
dm	1.00	debye	KDB
gf	89.03	kJ/mol	Joback Method
hf	-118.10	kJ/mol	NIST Webbook
hf	-116.50 ± 1.60	kJ/mol	NIST Webbook
hfl	-156.20 ± 0.42	kJ/mol	NIST Webbook
hfl	-154.60 ± 1.50	kJ/mol	NIST Webbook
hfus	16.39	kJ/mol	Joback Method
hvap	40.10	kJ/mol	NIST Webbook
hvap	41.50	kJ/mol	NIST Webbook
hvap	38.10	kJ/mol	NIST Webbook
hvap	40.20 ± 0.30	kJ/mol	NIST Webbook
hvap	40.00 ± 0.10	kJ/mol	NIST Webbook
hvap	40.04 ± 0.06	kJ/mol	NIST Webbook
ie	7.84 ± 0.02	eV	NIST Webbook
ie	7.80 ± 0.10	eV	NIST Webbook

	ie	8.60 ± 0.30	eV	NIST Webbook
log10ws		-0.46		Aqueous Solubility Prediction Method
logp		1.396		Crippen Method
mcvol		105.380	ml/mol	McGowan Method
nfpaf		%!d(float64=3)		KDB
nfpah		%!d(float64=3)		KDB
pc		3630.00 ± 36.27	kPa	NIST Webbook
pc		3630.00	kPa	KDB
rinpol		748.00		NIST Webbook
rinpol		750.00		NIST Webbook
rinpol		748.00		NIST Webbook
rinpol		752.00		NIST Webbook
rinpol		746.00		NIST Webbook
rinpol		746.00		NIST Webbook
rinpol		748.00		NIST Webbook
rinpol		745.00		NIST Webbook
rinpol		746.00		NIST Webbook
rinpol		744.00		NIST Webbook
rinpol		742.60		NIST Webbook
rinpol		752.00		NIST Webbook
rinpol		742.60		NIST Webbook
ripol		901.00		NIST Webbook
ripol		900.00		NIST Webbook
ripol		910.00		NIST Webbook
ripol		905.00		NIST Webbook
ripol		894.00		NIST Webbook
ripol		904.00		NIST Webbook
tb		382.35 ± 0.40	K	NIST Webbook
tb		383.85 ± 0.40	K	NIST Webbook
tb		382.15 ± 3.00	K	NIST Webbook
tb		382.15 ± 3.00	K	NIST Webbook
tb		383.05 ± 0.80	K	NIST Webbook
tb		382.70	K	NIST Webbook
tb		383.15 ± 2.00	K	NIST Webbook
tb		382.56 ± 0.30	K	NIST Webbook
tb		380.70	K	NIST Webbook
tb		382.20 ± 1.50	K	NIST Webbook
tb		382.45	K	NIST Webbook
tb		381.55 ± 0.40	K	NIST Webbook
tb		383.15 ± 3.00	K	NIST Webbook
tb		382.40	K	KDB
tb		382.40	K	NIST Webbook
tc		555.80	K	KDB

tc	555.80	K	Gas-Liquid Critical Temperatures of Some Alkenes, Amines, and Cyclic Hydrocarbons
tc	555.80 ± 0.55	K	NIST Webbook
tf	209.60 ± 0.60	K	NIST Webbook
tf	210.15	K	NIST Webbook
tf	215.90	K	Aqueous Solubility Prediction Method
tf	210.00	K	KDB
tf	210.15 ± 0.50	K	NIST Webbook
tf	233.55 ± 0.50	K	NIST Webbook
vc	0.406	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	261.47	J/mol×K	556.73	Joback Method
cpg	210.62	J/mol×K	415.16	Joback Method
cpg	221.60	J/mol×K	443.48	Joback Method
cpg	232.16	J/mol×K	471.79	Joback Method
cpg	242.32	J/mol×K	500.10	Joback Method
cpg	252.08	J/mol×K	528.41	Joback Method
cpg	199.23	J/mol×K	386.85	Joback Method
dvisc	0.0005120	Paxs	303.15	Studies of viscosities of dilute solutions of alkylamine in non-electrolyte solvents. II. Haloalkanes and other polar solvents
dvisc	0.0004230	Paxs	313.15	Studies of viscosities of dilute solutions of alkylamine in non-electrolyte solvents. II. Haloalkanes and other polar solvents
hvapt	41.00	kJ/mol	291.00	NIST Webbook
hvapt	40.00	kJ/mol	351.50	NIST Webbook
hvapt	39.80	kJ/mol	362.00	NIST Webbook
hvapt	33.47	kJ/mol	382.40	NIST Webbook

pvap	2.72	kPa	293.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K
pvap	3.60	kPa	298.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K
pvap	4.71	kPa	303.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K
pvap	6.12	kPa	308.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K

pvap	7.80	kPa	313.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K
pvap	9.89	kPa	318.15	Thermodynamics of mixtures with strongly negative deviations from Raoult's law Part 9. Vapor liquid equilibria for the system 1-propanol + di-n-propylamine at six temperatures between 293.15 and 318.15K
rhol	728.20	kg/m3	303.15	Density and Relative Permittivity of 2-Methoxyethanol + Dipropylamine Mixtures at Various Temperatures
rhol	733.72	kg/m3	298.15	Thermodynamics of ketone + amine mixtures. Part IX. Excess molar enthalpies at 298.15K for dipropylamine, or dibutylamine + 2-alkanone systems and modeling of linear or aromatic amine + 2-alkanone mixtures in terms of DISQUAC and ERAS

rhol	733.37	kg/m3	298.15	Thermodynamics of amide + amine mixtures. 5. Excess molar enthalpies of N,N-dimethylformamide or N,N-dimethylacetamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at 298.15 K. Application of the ERAS model
rhol	738.18	kg/m3	293.15	Volumetric properties of binary mixtures of (acetonitrile + amines) at several temperatures with application of the ERAS model
rhol	733.64	kg/m3	298.15	Volumetric properties of binary mixtures of (acetonitrile + amines) at several temperatures with application of the ERAS model
rhol	738.00	kg/m3	293.00	KDB
rhol	724.48	kg/m3	308.15	Volumetric properties of binary mixtures of (acetonitrile + amines) at several temperatures with application of the ERAS model
rhol	731.21	kg/m3	303.15	Studies of partial molar volumes of alkylamine in non-electrolyte solvents I. Alkylamines in hydrocarbons at 303.15 and 313.15K

rhol	726.15	kg/m3	313.15	Studies of partial molar volumes of alkylamine in non-electrolyte solvents I. Alkylamines in hydrocarbons at 303.15 and 313.15K
rhol	731.21	kg/m3	303.15	Studies of viscosities of dilute solutions of alkylamines in non-electrolyte solvents III. Alkylamines in butanols 303.15K
rhol	738.19	kg/m3	293.15	Thermodynamics of amide + amine mixtures. 1. Volumetric, speed of sound, and refractive index data for N,Ndimethylformamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at several temperatures
rhol	733.62	kg/m3	298.15	Thermodynamics of amide + amine mixtures. 1. Volumetric, speed of sound, and refractive index data for N,Ndimethylformamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at several temperatures

rhol	729.10	kg/m3	303.15	Thermodynamics of amide + amine mixtures. 1. Volumetric, speed of sound, and refractive index data for N,Ndimethylformamide + N-propylpropan-1-amine, + N-butylbutan-1-amine, + butan-1-amine, or + hexan-1-amine systems at several temperatures
rhol	738.47	kg/m3	291.15	Density and Relative Permittivity of 2-Methoxyethanol + Dipropylamine Mixtures at Various Temperatures
rhol	737.20	kg/m3	293.15	Density and Relative Permittivity of 2-Methoxyethanol + Dipropylamine Mixtures at Various Temperatures
rhol	732.56	kg/m3	298.15	Density and Relative Permittivity of 2-Methoxyethanol + Dipropylamine Mixtures at Various Temperatures
rhol	729.07	kg/m3	303.15	Volumetric properties of binary mixtures of (acetonitrile + amines) at several temperatures with application of the ERAS model
rhol	723.64	kg/m3	308.15	Density and Relative Permittivity of 2-Methoxyethanol + Dipropylamine Mixtures at Various Temperatures

speedsl	1209.38	m/s	293.15	Thermodynamics of (ketone + amine) mixtures. Part VI. Volumetric and speed of sound data at (293.15, 298.15, and 303.15) K for (2-heptanone + dipropylamine, +dibutylamine, or +triethylamine) systems
speedsl	1188.00	m/s	298.15	Thermodynamics of (ketone + amine) mixtures. Part VI. Volumetric and speed of sound data at (293.15, 298.15, and 303.15) K for (2-heptanone + dipropylamine, +dibutylamine, or +triethylamine) systems
speedsl	1167.57	m/s	303.15	Thermodynamics of (ketone + amine) mixtures. Part VI. Volumetric and speed of sound data at (293.15, 298.15, and 303.15) K for (2-heptanone + dipropylamine, +dibutylamine, or +triethylamine) systems
speedsl	1209.20	m/s	293.15	Thermodynamics of ketone + amine mixtures Part IV. Volumetric and speed of sound data at (293.15; 298.15 and 303.15 K) for 2-butanone +dipropylamine, +dibutylamine or +triethylamine systems

speedsl	1149.03	m/s	308.15	Mixing Properties for Binary Liquid Mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine at Temperatures from (288.15 to 308.15) K
speedsl	1167.10	m/s	303.15	Thermodynamics of ketone + amine mixtures Part IV. Volumetric and speed of sound data at (293.15; 298.15 and 303.15 K) for 2-butanone +dipropylamine, +dibutylamine or +triethylamine systems
speedsl	1235.06	m/s	288.15	Mixing Properties for Binary Liquid Mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine at Temperatures from (288.15 to 308.15) K
speedsl	1213.41	m/s	293.15	Mixing Properties for Binary Liquid Mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine at Temperatures from (288.15 to 308.15) K
speedsl	1191.86	m/s	298.15	Mixing Properties for Binary Liquid Mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine at Temperatures from (288.15 to 308.15) K
speedsl	1170.43	m/s	303.15	Mixing Properties for Binary Liquid Mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine at Temperatures from (288.15 to 308.15) K

speedsl	1187.70	m/s	298.15	Thermodynamics of ketone + amine mixtures Part IV. Volumetric and speed of sound data at (293.15; 298.15 and 303.15 K) for 2-butanone +dipropylamine, +dibutylamine or +triethylamine systems
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Correlations

Information	Value
Property code	pvap
Equation	$\ln(P_{\text{vap}}) = A + B/T + C*\ln(T) + D*T^2$
Coeff. A	1.45365e+02
Coeff. B	-1.01337e+04
Coeff. C	-1.95845e+01
Coeff. D	1.57470e-05
Temperature range (K), min.	210.15
Temperature range (K), max.	555.80

Datasets

Viscosity, Pa*s

Temperature, K - Liquid	Pressure, kPa - Liquid	Viscosity, Pa*s - Liquid
303.15	101.33	0.0005118
Reference		https://www.doi.org/10.1016/j.tca.2009.07.008

Sources

Studies of partial molar volumes of alkylamine in non-electrolyte solvents I. Mixtures of 1,4-dioxane and 303.15K mixtures of Methyl tert-Butyl Ether with Propylamine and Dipropylamine
in mixtures IV. Molar volume and speed of sound data base (203.15, 298.15 and 302.15 K) for 2-butanone, speed of sound and viscosity of 1-alkylamine
molar excess molar enthalpies of Non-ideal solution by Redundant Method:
N,N-dimethylacetamide + butan-1-amine,
thermodynamics of ketone + amine
mixtures in various solvents at several temperatures. Part V. Molal volume and speed of sound of 1-alkylamine + 2-alkanone
solutions in various solvents and
some comments on the Joback model:
excess molar volume of 1-alkylamine, or
solutions of alkylamines in
non-electrolyte solvents III.
Alkylamines in butanols 303.15K:
Thermodynamic study of (heptane + amine) mixtures. III: Excess and partial
Molar volumes in mixtures with
secondary, tertiary, and cyclic amines
at 298.15 K:
Thermodynamics of ketone + amine
mixtures. Part IX. Excess molar
volume of 1-alkylamine +
2-alkanone systems and modeling of
solutions of alkylamine in 1-, 2-alkanone
systems (acetone, THF, CHCl₃, HAC and
2-methylpropanoic acid) in various
solvents: Mixtures at various temperatures:
strongly negative deviations from
Kabell's law Part 9. Vapor liquid
equilibria for the system 1-propanol +
dimethylpropylamine at six temperatures
mixtures of 1-acetonitrile + amines) at
several temperatures with application
of some theories of amines, and Cyclic
Nitrogenous:

KDB Vapor Pressure Data:

Studies of viscosities of dilute
solutions of alkylamines in
non-electrolyte solvents: IV.
Alkylamines in 1,4-dioxane and oxolane
at 303.15K:

Legend

af:	Acentric Factor
affp:	Proton affinity
basg:	Gas basicity
chl:	Standard liquid enthalpy of combustion
cpg:	Ideal gas heat capacity
dm:	Dipole Moment
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
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
ie:	Ionization energy

log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
nfpaf:	NFPA Fire Rating
nfpah:	NFPA Health Rating
pc:	Critical Pressure
pvap:	Vapor pressure
rhol:	Liquid Density
rinpol:	Non-polar retention indices
ripol:	Polar retention indices
speedsl:	Speed of sound in fluid
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume

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