Acetamide, N-methyl-

Other names:	ACETYLMETHYLAMINE
	CH3CONHCH3
	MONOMETHYLACETAMIDE
	Methylacetamide
	N-Acetyl-N-methylamine
	N-METHYLACETAMIDE
	N-methylethanamide
	X 44
Inchi:	InChI=1S/C3H7NO/c1-3(5)4-2/h1-2H3,(H,4,5)
InchiKey:	OHLUUHNLEMFGTQ-UHFFFAOYSA-N
Formula:	C3H7NO
SMILES:	CNC(C)=O
Mol. weight [g/mol]:	73.09
CAS:	79-16-3

Physical Properties

Property code	Value	Unit	Source
affp	888.50	kJ/mol	NIST Webbook
basg	857.60	kJ/mol	NIST Webbook
chl	-1867.70 ± 1.30	kJ/mol	NIST Webbook
chs	-1862.10 ± 5.10	kJ/mol	NIST Webbook
gf	-65.15	kJ/mol	Joback Method
hf	-248.00 ± 5.50	kJ/mol	NIST Webbook
hfl	-313.20 ± 1.30	kJ/mol	NIST Webbook
hfs	-318.80 ± 5.10	kJ/mol	NIST Webbook
hfus	10.22	kJ/mol	Joback Method
hsub	69.87 ± 0.31	kJ/mol	NIST Webbook
hsub	70.80 ± 2.00	kJ/mol	NIST Webbook
hsub	70.80 ± 2.00	kJ/mol	NIST Webbook
hvap	35.45	kJ/mol	Joback Method
ie	9.85	eV	NIST Webbook
ie	8.90 ± 0.02	eV	NIST Webbook
ie	9.70 ± 0.05	eV	NIST Webbook
log10ws	-0.04		Crippen Method
logp	-0.248		Crippen Method
mcvol	64.680	ml/mol	McGowan Method
pc	4890.21	kPa	Joback Method

rinpol	857.00		NIST Webbook
rinpol	825.00		NIST Webbook
ripol	1623.00		NIST Webbook
ripol	1609.00		NIST Webbook
ripol	1623.00		NIST Webbook
ripol	1648.00		NIST Webbook
ripol	1609.00		NIST Webbook
tb	479.15	K	Vapor-Liquid Equilibrium Data for N-Methylacetamide and N,N-Dimethylacetamide with Cumene at 97.3 kPa
tb	478.20	K	NIST Webbook
tb	478.07	K	Isobaric vapor liquid equilibria for water + acetic acid + (N-methyl pyrrolidone or N-methyl acetamide)
tc	557.68	K	Joback Method
tf	303.67 ± 0.15	K	NIST Webbook
tf	302.90 ± 1.00	K	NIST Webbook
tf	303.43 ± 0.20	K	NIST Webbook
vc	0.244	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	146.12	J/mol×K	557.68	Joback Method
cpg	116.34	J/mol×K	403.01	Joback Method
cpg	122.81	J/mol×K	433.95	Joback Method
cpg	129.01	J/mol×K	464.88	Joback Method
cpg	134.96	J/mol×K	495.81	Joback Method
cpg	140.66	J/mol×K	526.75	Joback Method
cpg	109.61	J/mol×K	372.08	Joback Method
dvisc	0.0038224	Pa×s	303.15	Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures (303.15 to 318.15) K

dvisc	0.0038224	Pa×s	303.15	Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures (303.15 to 318.15) K
dvisc	0.0029041	Pa×s	313.15	Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures (303.15 to 318.15) K
dvisc	0.0033124	Pa×s	308.15	Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures (303.15 to 318.15) K
dvisc	0.0026072	Pa×s	318.15	Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures (303.15 to 318.15) K
hfust	9.73	kJ/mol	303.80	NIST Webbook
hfust	9.73	kJ/mol	303.80	NIST Webbook
hfust	10.11	kJ/mol	303.70	NIST Webbook
hsubt	54.00	kJ/mol	295.50	NIST Webbook
hvapt	62.00	kJ/mol	390.50	NIST Webbook
hvapt	55.50	kJ/mol	388.50	NIST Webbook
hvapt	53.50	kJ/mol	416.00	NIST Webbook
hvapt	59.60	kJ/mol	388.00	NIST Webbook
rhol	941.81	kg/m3	313.15	Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure

rhol	937.44	kg/m3	318.15	Density and Viscosity of N-Methylacetamide-Calcium Chloride Mixtures over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	933.24	kg/m3	323.15	Density and Viscosity of N-Methylacetamide-Calcium Chloride Mixtures over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	929.07	kg/m3	328.15	Density and Viscosity of N-Methylacetamide-Calcium Chloride Mixtures over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	946.01	kg/m3	308.15	Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	945.85	kg/m3	308.15	Density and Viscosity of N-Methylacetamide-Calcium Chloride Mixtures over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	937.59	kg/m3	318.15	Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure

rhol	933.36	kg/m3	323.15	Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	929.17	kg/m3	328.15	Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	945.71	kg/m3	308.15	Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure
rhol	941.53	kg/m3	313.15	Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure
rhol	937.33	kg/m3	318.15	Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure

rhol	933.16	kg/m3	323.15	Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure
rhol	928.93	kg/m3	328.15	Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure
rhol	949.70	kg/m3	308.15	Ultrasonic Studies of Binary Mixtures of Some Aromatic Ketones with N-Methyl-acetamide at 308.15 K
rhol	941.63	kg/m3	313.15	Density and Viscosity of N-Methylacetamide-Calcium Chloride Mixtures over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure
rhol	956.30	kg/m3	293.15	Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data
rhol	951.20	kg/m3	298.15	Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data

rhol	950.20	kg/m3	303.15	Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data
rhol	937.60	kg/m3	318.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K
rhol	941.70	kg/m3	313.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K
rhol	945.90	kg/m3	308.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K
rhol	950.10	kg/m3	303.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K
rhol	954.20	kg/m3	298.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K

rhol	958.40	kg/m3	293.15	Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K	
rhol	940.50	kg/m3	313.15	Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data	
rhol	946.80	kg/m3	308.15	Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data	
speedsl	1319.00	m/s	318.15	Density and Speed of Sound of Binary Mixtures of N-Methylacetamide with Ethyl Acetate, Ethyl Chloroacetate, and Ethyl Cyanoacetate in the Temperature Interval (303.15 to 318.15) K	
speedsl	1334.00	m/s	313.15	Density and Speed of Sound of Binary Mixtures of N-Methylacetamide with Ethyl Acetate, Ethyl Chloroacetate, and Ethyl Cyanoacetate in the Temperature Interval (303.15 to 318.15) K	

speedsl	1362.00	m/s	308.15	Density and Speed of Sound of Binary Mixtures of N-Methylacetamide with Ethyl Acetate, Ethyl Chloroacetate, and Ethyl Cyanoacetate in the Temperature Interval (303.15 to 318.15) K
speedsl	1367.00	m/s	303.15	Density and Speed of Sound of Binary Mixtures of N-Methylacetamide with Ethyl Acetate, Ethyl Chloroacetate, and Ethyl Cyanoacetate in the Temperature Interval (303.15 to 318.15) K

Correlations

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/(T + C)
Coeff. A	1.50574e+01
Coeff. B	-4.21034e+03
Coeff. C	-7.48750e+01
Temperature range (K), min.	359.94
Temperature range (K), max.	506.89

Information	Value
Property code	pvap
Equation	ln(Pvp) = A + B/T + C*ln(T) + D*T^2
Coeff. A	5.63193e+01
Coeff. B	-8.67256e+03
Coeff. C	-5.45449e+00
Coeff. D	1.83955e-07
Temperature range (K), min.	301.15
Temperature range (K), max.	718.00

Datasets

Viscosity, Pa*s

Temperature, K - Liquid	Pressure, kPa - Liquid	Viscosity, Pa*s - Liquid
308.15	101.30	0.0033130

Reference *https://www.doi.org/10.1016/j.jct.2005.05.006*

Temperature, K	Pressure, kPa	Viscosity, Pa*s
308.15	101.00	0.0033120

Reference *https://www.doi.org/10.1016/j.jct.2006.06.009*

Pressure, kPa	Temperature, K	Viscosity, Pa*s
101.30	308.15	0.0036700

Reference *https://www.doi.org/10.1021/je020178w*

Sources

Densities, Viscosities, and Excess Properties for Binary Mixtures of Some Glycols and Polyglycols in N-Methylacetamide at 308.15 K:	https://www.doi.org/10.1021/je020178w
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
KDB Vapor Pressure Data:	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1378
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Isobaric vapor liquid equilibria for water + acetic acid + (N-methyl pyrrolidone or N-methyl acetamide):	https://www.doi.org/10.1016/j.fluid.2006.02.002
Density and Viscosity of Zinc Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Atmospheric Pressure:	https://www.doi.org/10.1021/acs.jced.8b00399
The Yaws Handbook of Vapor Pressure:	https://www.sciencedirect.com/book/9780128029992/the-yaws-handbook-of-vapor-pressure
Density and viscosity of binary liquid systems of N-methylacetamide with aromatic ketones at T = 308.15 K:	https://www.doi.org/10.1016/j.jct.2005.05.006
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Excess Enthalpies of (N-Methylformamide or N-Methylacetamide) + Aromatic Compounds at 303.15 K:	https://www.doi.org/10.1021/je700414c
Density and Viscosity of Magnesium Chloride Solution in N-Methylacetamide over the Temperature Range from 308.15 to 328.15 K at Ambient Pressure:	https://www.doi.org/10.1021/acs.jced.9b00046
Volumetric and transport properties of binary liquid mixtures of N-methylacetamide with lactones at temperatures 303.15 to 318.15 K:	https://www.doi.org/10.1016/j.jct.2008.05.004
Densities and viscosities of binary liquid mixtures of N-methylacetamide with some chloroethanes and chloroethenes at T = 308.15 K:	https://www.doi.org/10.1016/j.jct.2006.06.009
Vapor-Liquid Equilibrium Data for N-Methylacetamide and N,N-Dimethylacetamide with Cumene at 97.3 kPa:	https://www.doi.org/10.1021/je800481n

Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Densities and volumetric properties of (acetonitrile + an amide) binary mixtures at temperatures between 293.15 K and 318.15 K:	https://www.doi.org/10.1016/j.jct.2006.01.015
Ultrasonic Studies of Binary Mixtures of Some Aromatic Ketones with N-Methylacetamide at 308.15 K:	https://www.doi.org/10.1021/je040008e
Solubility of Hydrogen Sulfide in N-Methylacetamide and Liquid–Liquid Equilibria for Water + N-Methylacetamide + Benzonitrile or + N,N-Dimethylacetamide:	https://www.doi.org/10.1021/je500478t
Experimental Measurement and Modeling Interpretation of Association Behavior and Molecular Interactions in Binary Mixtures from Thermoacoustics and Molecular Compression Data:	https://www.doi.org/10.1021/je9007074
NIST Webbook:	https://www.doi.org/10.1007/s10765-016-2096-3
Apparent molar volumes and apparent molar heat capacities of aqueous N-Methylacetamide at temperatures from 278.15 K to 393.15 K and pressure 0.35 MPa:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C79163&Units=SI
Density and Viscosity of 1-Ethyl-3-methylimidazolium Ethyl Sulfate + N-Methylacetamide Mixtures at Temperatures from 278.15 K to 393.15 K and Pressure 0.35 MPa:	https://www.doi.org/10.1016/j.jct.2006.04.007
Density and Speed of Sound of Binary Mixtures of N-Methylacetamide with Ethyl Cyanoacetate in the Temperature Interval (303.15 to 318.15) K:	https://www.doi.org/10.1021/acs.jced.7b00494
	https://www.doi.org/10.1021/je060343y
	https://www.cheric.org/research/kdb/hcprop/showprop.php?cmpid=1378

Legend

affp:	Proton affinity
basg:	Gas basicity
chl:	Standard liquid enthalpy of combustion
chs:	Standard solid enthalpy of combustion
cpg:	Ideal gas heat capacity
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
hfs:	Solid phase enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hfust:	Enthalpy of fusion at a given temperature
hsub:	Enthalpy of sublimation at standard conditions
hsubt:	Enthalpy of sublimation at a given temperature
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
speedsl:	Speed of sound in fluid
tb:	Normal Boiling Point Temperature

tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume