

# Choline chloride

Other names:	(.beta.-hydroxyethyl)trimethylammonium chloride (2-hydroxyethyl)trimethylammonium chloride 2-hydroxy-N,N,N-trimethylethanaminium chloride cholinium chloride trimethyl(2-hydroxyethyl)ammonium chloride
Inchi:	InChI=1S/C5H14NO.ClH/c1-6(2,3)4-5-7;/h7H,4-5H2,1-3H3;1H/q+1;/p-1
InchiKey:	SGMZJAMFUVOLNK-UHFFFAOYSA-M
Formula:	C5H14ClNO
SMILES:	C[N+](C)(C)CCO.[Cl-]
Mol. weight [g/mol]:	139.62
CAS:	67-48-1

## Physical Properties

Property code	Value	Unit	Source
tf	577.20	K	Formation of Deep Eutectic Solvents by Phenols and Choline Chloride and Their Physical Properties
tt	351.62	K	Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere

## Sources

Density, transport properties and electrochemical potential windows for solubility modelling and thermodynamic properties of ammonium chloride/urea based deep eutectic solvents, their synthesis and physical properties of the Pure Deep Eutectic Solvent, [ChCl]:[Lev] (1:2)	<a href="https://www.doi.org/10.1016/j.fluid.2015.03.025">https://www.doi.org/10.1016/j.fluid.2015.03.025</a>
DES, Sugars and Deep Eutectic Solvents and their Physical Properties: Solubility of Sodium Salts in Ammonium-Based Deep Eutectic Solvent	<a href="https://www.doi.org/10.1016/j.jct.2019.01.018">https://www.doi.org/10.1016/j.jct.2019.01.018</a>
Effect of Water on the Physical Properties of Deep Eutectic Solvents	<a href="https://www.doi.org/10.1021/je500320c">https://www.doi.org/10.1021/je500320c</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1016/j.fluid.2017.03.008">https://www.doi.org/10.1016/j.fluid.2017.03.008</a>
Formation of Deep Eutectic Solvents by Phenols and Choline Chloride and Their Physical Properties	<a href="https://www.doi.org/10.1021/acs.jced.6b00563">https://www.doi.org/10.1021/acs.jced.6b00563</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1016/j.tca.2012.04.030">https://www.doi.org/10.1016/j.tca.2012.04.030</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1021/je400045d">https://www.doi.org/10.1021/je400045d</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1021/acs.jced.9b00436">https://www.doi.org/10.1021/acs.jced.9b00436</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1021/acs.jced.7b00184">https://www.doi.org/10.1021/acs.jced.7b00184</a>
Thermal Properties of Choline Chloride/Urea System Studied under Moisture-Free Atmosphere	<a href="https://www.doi.org/10.1021/acs.jced.9b00474">https://www.doi.org/10.1021/acs.jced.9b00474</a>

## NIST Webbook:

Density of aqueous choline  
chloride-based ionic liquids analogues:  
Is choline kosmotrope or chaotrope?:

<http://webbook.nist.gov/cgi/cbook.cgi?ID=C67481&Units=SI>

Densities of Ammonium and  
Phosphonium based Deep Eutectic  
Solvents and their mixtures with  
(ethanol, chloroform, glycerol) deep  
eutectic solvents and their mixtures for  
separation of isopropanol from its  
aqueous solution and choline chloride +  
urea based deep eutectic solvent for the  
separation of choline chloride from its  
aqueous solution by ethylene glycol  
formamide based deep eutectic solvents:  
Amine Based Deep Eutectic Solvents:  
Aqueous Systems Containing (Choline  
Chloride and Urea) or (Choline  
Chloride and Glycerol) Deep Eutectic Solvent  
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Deep eutectic solvent via extractive  
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eutectic mixture of choline chloride  
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Choline chloride based deep eutectic  
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and deep eutectic solvents formed by  
choline chloride and urea and its  
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and type of organic acid on the  
formation of deep eutectic solvents  
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mixture (LTL) formed by choline  
chloride + urea and its separation  
absorption by low-viscosity,  
highly water-soluble deep eutectic  
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salts: Solubility in short-chain  
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eutectic solvents: Investigation of  
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Heptane in Toluene + Hexane Using  
Deep Eutectic Solvents at high  
pressures of aqueous mixtures of  
(choline chloride + ethylene glycol) and  
(choline chloride + urea) based deep  
eutectic solvents: Different Natural Deep Eutectic  
range from 293.15 to 323.15 K: Active  
indices of choline chloride-based deep  
liquid-liquid equilibrium water:  
alcohol-ester systems with deep  
soluble solvent Thermodynamic  
properties of NH<sub>3</sub> in Glycerin and its  
derivatives: of ammonia in choline  
chloride plus urea at (298.2-353.2) K  
and (0.1-10) MPa: Liquid Equilibria for the  
Quaternary System Water + Ethanol +  
Ethylene Glycol + Choline Chloride and  
solvents and effect of water on their  
thermodynamic properties and potential  
Green Solvent: A comprehensive study  
of the thermodynamic properties of  
choline chloride based deep eutectic solvents  
(ethanol, glycerol, urea, and urea +  
water) in the ionic-liquid-based ionic liquids:  
Experimental measurements and  
computational modeling of phenol solubility  
in aqueous solutions of choline  
chloride/urea based deep eutectic solvents  
in water: Solubility of water for the  
measurement of the vapor  
pressure of liquid water: ammonium  
and phosphonium based deep eutectic  
solvents and volumetric properties of  
(choline chloride + urea) based deep eutectic  
solvent and methanol mixtures in the  
temperature range of 293.15-323.15 K:

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Thermodynamics of phase transfer for polar molecules from alkanes to deep eutectic solvents  
Solubilities and thermodynamic properties of CO<sub>2</sub> in choline-chloride based deep eutectic solvents  
Viscometric study of myo-inositol in aqueous deep eutectic solvent  
Vapor-Liquid Equilibria for 2-Propanol Dehydration through Extractive Distillation Using Mixtures of Choline Chloride and Organic Chloride-based Deep Eutectic Solvent and Their Mixtures  
Eutectic Mixtures of Choline Chloride and Dimethyl Acetate form eutectic solvents with organic chloride-based formation of Deep Eutectic Solvents by Phenols and Choline Chloride and Investigation of Properties of ethyl alcohol and the deep eutectic solvent  
Study on the phase behavior of aqueous two-phase systems of deep eutectic solvent choline chloride and urea + density of deep eutectic solvents using atomic contribution of benzene and thiophene by novel deep eutectic  
Molar heat capacities of choline chloride-based deep eutectic solvents and their binary mixtures with density and dynamic viscosity of choline chloride-based deep eutectic solvents  
Molar heat capacity of Selected Type III Deep Eutectic Solvents (303.15-358.15)  
Acetonitrile Dehydration via Extractive Distillation Using Low Transition Temperature Mixtures of Mannitol  
Properties of Carbon Dioxide in Hydrocarbons and Deep Eutectic Solvents  
High-Pressure Density Measurements for choline chloride: Urea deep eutectic solvent pharmaceutical formulation by eutectic formation and up to 50 MPa: Densities of a deep eutectic solvent based on choline chloride and glycerol and its aqueous mixtures at elevated pressures  
Aqueous deep eutectic solvent (choline chloride/glycerol) (278, 298, 318, 338, 358, 378, 398, 418, 438, 458, 478, 498, 518, 538, 558, 578, 598, 618, 638, 658, 678, 698, 718, 738, 758, 778, 798, 818, 838, 858, 878, 898, 918, 938, 958, 978, 998, 1018, 1038, 1058, 1078, 1098, 1118, 1138, 1158, 1178, 1198, 1218, 1238, 1258, 1278, 1298, 1318, 1338, 1358, 1378, 1398, 1418, 1438, 1458, 1478, 1498, 1518, 1538, 1558, 1578, 1598, 1618, 1638, 1658, 1678, 1698, 1718, 1738, 1758, 1778, 1798, 1818, 1838, 1858, 1878, 1898, 1918, 1938, 1958, 1978, 1998, 2018, 2038, 2058, 2078, 2098, 2118, 2138, 2158, 2178, 2198, 2218, 2238, 2258, 2278, 2298, 2318, 2338, 2358, 2378, 2398, 2418, 2438, 2458, 2478, 2498, 2518, 2538, 2558, 2578, 2598, 2618, 2638, 2658, 2678, 2698, 2718, 2738, 2758, 2778, 2798, 2818, 2838, 2858, 2878, 2898, 2918, 2938, 2958, 2978, 2998, 3018, 3038, 3058, 3078, 3098, 3118, 3138, 3158, 3178, 3198, 3218, 3238, 3258, 3278, 3298, 3318, 3338, 3358, 3378, 3398, 3418, 3438, 3458, 3478, 3498, 3518, 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