D-Serine

Other names:	(S)-(+)-serine
	(S)-2-amino-3-hydroxypropanoic acid
	(S)-serine
	.alpha.-amino-.beta.-hydroxypropionic acid
	.beta.-hydroxyalanine
	L-serine
	Serine, D-
Inchi:	InChI=1S/C3H7NO3/c4-2(1-5)3(6)7/h2,5H,1,4H2,(H,6,7)/t2-/m0/s1
InchiKey:	MTCFGRXMJLQNBG-REOHCLBHSA-N
Formula:	C3H7NO3
SMILES:	NC(CO)C(=O)O
Mol. weight [g/mol]:	105.09
CAS:	312-84-5

Physical Properties

Property code	Value	Unit	Source
gf	-364.17	kJ/mol	Joback Method
hf	-493.78	kJ/mol	Joback Method
hfus	14.97	kJ/mol	Joback Method
hvap	72.63	kJ/mol	Joback Method
log10ws	1.01		Crippen Method
logp	-1.609		Crippen Method
mcvol	76.420	ml/mol	McGowan Method
pc	7014.41	kPa	Joback Method
tb	578.36	K	Joback Method
tc	760.22	K	Joback Method
tf	363.40	K	Joback Method
tt	498.15	K	The Research and Measurement about the Solubility of l-Serine in Eight Common Pure Solvents and Four Binary Mixed Solvents for T = (278.15-333.15) K
vc	0.271	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	208.59	J/mol×K	729.91	Joback Method
cpg	184.80	J/mol×K	578.36	Joback Method
cpg	190.08	J/mol×K	608.67	Joback Method
cpg	195.08	J/mol×K	638.98	Joback Method
cpg	199.83	J/mol×K	669.29	Joback Method
cpg	204.33	J/mol×K	699.60	Joback Method
cpg	212.60	J/mol×K	760.22	Joback Method
hvapt	141.00	kJ/mol	454.00	Enthalpy of sublimation of hydroxyl-containing amino acids: Knudsen's effusion mass spectrometric study

Sources

Volumetric properties for glycine and L-serine in aqueous solutions of
https://www.doi.org/10.1016/j.jct.2016.07.046

Enthalpic interactions between some amino acids and cyclohexanone in
https://www.doi.org/10.1016/j.tca.2006.07.009

Volumetric Properties of Glycine, L-Alanine, and l-Serine in Formamide
https://www.doi.org/10.1021/je5003797

Water Mixtures at 298.15 K:
http://pubs.acs.org/doi/abs/10.1021/ci990307l

Electrolytic Effect on the Solubility and Solvation Thermodynamics of l-Serine
https://www.doi.org/10.1021/acs.jced.9b00363

Surface Tension in Aqueous Solutions of Small-Chain Amino and Organic Acids
https://www.doi.org/10.1021/acs.jced.9b00026

Enthalpy of sublimation of hydroxyl-containing amino acids: Knudsen's effusion mass
https://www.doi.org/10.1016/j.jct.2016.02.021

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Alkali Metal Nitrates:
Enthalpies of dilution of l-Alanine in Dimethylsulfoxide + Water and
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https://www.doi.org/10.1021/je0601053

Systems Composed of [bmim]BF4 and Glycine, l-Alanine, and l-Serine at
https://www.doi.org/10.1016/j.jct.2008.09.019

Effects of glucose ring structure on volumetric properties of amino acids in
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DMSO + water mixtures:
Enthalpies of dilution of glycine, l-alanine and l-serine in aqueous
https://www.doi.org/10.1016/j.tca.2004.05.021

potassium chloride solutions:
Solubility of l-serine, l-threonine and l-isoleucine in aqueous aliphatic
https://www.doi.org/10.1016/j.fluid.2008.05.008

alcohol solutions:
Salting-out behaviour of
https://www.doi.org/10.1016/j.jct.2014.11.014

1-butyl-3-methylimidazolium bromide, [C4mim][Br], ionic liquid on aqueous
https://www.chemeo.com/doc/models/crippen_log10ws

L-serine solutions at T = 298.15 K:
Densities and Speeds of Sound of l-Serine with Aqueous Solutions of
https://www.doi.org/10.1021/je3006425

Antibacterial Drugs at Different
Water Activity in Aqueous Amino Acid Solutions, with and without KCl, at
https://www.doi.org/10.1021/je700466s

298.15 K:
Enthalpies of transfer of amino acids from water to aqueous solutions of
https://www.doi.org/10.1016/j.tca.2005.04.002

formamide:
Volumetric, viscometric, and refractive index behaviour of a-amino acids and
https://www.doi.org/10.1016/j.jct.2005.04.011

their groups? contribution in aqueous D-glucose solution at different temperatures:

Salting-out effect in polypropylene glycol-amino acid aqueous solutions revealed by vapor pressure

Effect of L-serine and L-threonine on volumetric and acoustic behaviour of aqueous metformin hydrochloride solutions at T = (305.15, 310.15 and

Joback Method:

Study of the interactions of PAMAM-NH2 G4 dendrimer with

A thermochemical study of serine stereoisomers:

Vapor pressure osmometry determination of vapor-liquid equilibria behavior of aqueous

Temperature Dependences and Enthalpic Dissociation of the mechinal Molecular interactions of some amino acids in aqueous in Pure Water:

1-butyl-3-methylimidazolium bromide solutions at different temperatures: A volumetric approach.

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NIST Webbook:

Enthalpies of transfer of amino acids from water to aqueous solutions of sodium perchlorate

Thermodynamics of the ternary systems (water + glycine, L-alanine and L-serine + ammonium hydrogen

Volumetric and transport properties of ternary solutions of

Investigation of arginine in aqueous (L-histidine, L-arginine and

3,3-dimethylimidazolium methanesulfonate ionic liquid

Thermodynamics of ionic liquid dissociation at different temperatures in aqueous solution of

Volumetric studies of L-serine in aqueous solutions at T = (288.15 to 303.15) K,

L-serine-halatropine in Ae activity coefficients of CaCl2 in serine

aqueous mixtures at T and apparent molar volumes of serine,

The Research and Measurement about the Solubility of L-Serine in Eight

Serine Chloride and sodium Chloride and Properties of

binary aqueous

Osmotic and Activity Coefficients for T = (298.15 to 313.15) K of Amino Acid

Water Activity in Aqueous Amino Acid Solutions, Containing Ammonium

Volumetric Properties of Amino Acids in Aqueous N-Methylformamide

KCl effect on the solubility of five different amino acids in water:

Legend

cpg:	Ideal gas heat capacity
gf:	Standard Gibbs free energy of formation
hf:	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
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume

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