D-Leucine

Other names:	(R)-(-)-Leucine
	(S)-(+)-leucine
	(S)-2-amino-4-methylpentanoic acid
	(S)-2-amino-4-methylvaleric acid
	(S)-leucine
	.alpha.-amino-.gamma.-methylvaleric acid
	.alpha.-aminoisocaproic acid
	4-methyl-L-norvaline
	L-(+)-leucine
	L-.alpha.-aminoisocaproic acid
	L-leucine
	Leucine, D-
Inchi:	InChI=1S/C6H13NO2/c1-4(2)3-5(7)6(8)9/h4-5H,3,7H2,1-2H3,(H,8,9)/t5-/m0/s1
InchiKey:	ROHFNLRQFUQHCH-YFKPBYRVSA-N
Formula:	C6H13NO2
SMILES:	CC(C)CC(N)C(=O)O
Mol. weight [g/mol]:	131.17
CAS:	328-38-1

Physical Properties

Property code	Value	Unit	Source
chs	-3581.40 ± 0.84	kJ/mol	NIST Webbook
gf	-204.53	kJ/mol	Joback Method
hf	-408.75	kJ/mol	Joback Method
hfs	-637.56 ± 0.84	kJ/mol	NIST Webbook
hfus	15.13	kJ/mol	Joback Method
hvap	62.24	kJ/mol	Joback Method
log10ws	-0.74		Crippen Method
logp	0.444		Crippen Method
mcvol	112.820	ml/mol	McGowan Method
pc	4077.71	kPa	Joback Method
tb	554.38	K	Joback Method
tc	743.19	K	Joback Method
tf	321.39	K	Joback Method
vc	0.413	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	275.71	J/mol×K	554.38	Joback Method
cpg	285.39	J/mol×K	585.85	Joback Method
cpg	294.59	J/mol×K	617.32	Joback Method
cpg	303.34	J/mol×K	648.79	Joback Method
cpg	311.64	J/mol×K	680.26	Joback Method
cpg	319.50	J/mol×K	711.72	Joback Method
cpg	326.94	J/mol×K	743.19	Joback Method
psub	9.00e-04	kPa	420.70	Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis
psub	2.90e-03	kPa	440.30	Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis
psub	0.04	kPa	469.90	Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis
psub	0.53	kPa	499.20	Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis
psub	2.16	kPa	517.50	Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis

Sources

Viscosities of l-Phenylalanine, l-Leucine, l-Glutamic Acid, or l-Proline + 2.0 mol·dm⁻³ Aqueous NaCl or 2.0 mol·dm⁻³ Aqueous NaNO3 Solutions at T = (298.15 to 328.15) K	https://www.doi.org/10.1021/je1000878
Partial molar volume and partial molar compressibility of four homologous (volumetric behaviour of amino acids and their group contributions in aqueous solutions at different temperatures.	https://www.doi.org/10.1016/j.jct.2011.01.004
Thermodynamics of (solute + solute) and (solute + solvent) interactions of homologous series of amino acids with thiamine hydrochloride in aqueous medium at T = (305.15, 310.15, 315.15) K: A volumetric and acoustic approach:	https://www.doi.org/10.1016/j.jct.2010.08.004
	https://www.doi.org/10.1016/j.jct.2016.06.026

Volumetric and Viscometric Studies of Some Amino Acids in Aqueous Solutions of Cadmium Chloride at T = (288.15 to 318.15) K and at Atmospheric Pressure:	https://www.doi.org/10.1021/je100909b
Intermolecular/interionic interactions in l-leucine-, l-asparagine- and glycylglycine-aqueous electrolyte systems:	https://www.doi.org/10.1016/j.tca.2006.04.004
Partial Molar Volumes and Isentropic Compressibilities of Some Saccharides in Aqueous Solutions of Leucine at Different Temperatures:	https://www.doi.org/10.1021/je400977r
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Conductivity and fluorescence studies on the micellization properties of sodium cholate and sodium deoxycholate in aqueous medium at different temperatures: Effect of selected amino acids:	https://www.doi.org/10.1016/j.jct.2014.10.014
Study of Interactions between Amino Acids and Zinc Chloride in Aqueous Solutions through Volumetric Measurements at T = (288.15 to 318.15) K:	https://www.doi.org/10.1021/je8001464
Infinite Dilution Binary Diffusion Coefficients of Several α-Amino Acids in Water over a Temperature Range from (293.2 to 333.2) K with the Taylor Dispersion Technique:	https://www.doi.org/10.1021/je060149b
Sublimation and vapour pressure estimation of l-leucine using thermogravimetric analysis:	https://www.doi.org/10.1016/j.tca.2008.10.009
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
Solvation behaviour of biologically active compounds in aqueous solutions of antibacterial drug amoxicillin at different temperatures:	https://www.doi.org/10.1016/j.jct.2014.03.015
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Mode of action of betaine on some amino acids and globular proteins: Thermodynamic considerations:	https://www.doi.org/10.1016/j.jct.2017.03.025
Thermodynamics of the interactions of a homologous series of some amino acids with trimethylamine N-oxide: Volumetric, compressibility, and calorimetric studies:	https://www.doi.org/10.1016/j.jct.2011.05.012
Effect of KCl and KNO3 on Partial Molal Volumes and Partial Molal Compressibilities of Some Amino Acids at Different Temperatures:	https://www.doi.org/10.1007/s10765-008-0514-x
Effect of hydrophilic additives on volumetric and viscosity properties of amino acids in aqueous solutions at T = (283.15 to 333.15) K:	https://www.doi.org/10.1016/j.jct.2011.12.020
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C328381&Units=SI
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Study of the interactions of PAMAM-NH2 G4 dendrimer with selected natural amino acids in aqueous solutions:	https://www.doi.org/10.1016/j.jct.2013.10.022
Intermolecular interactions of .alpha.-amino acids and glycyl dipeptides with the drug domiphen bromide in aqueous solutions analyzed by volumetric and UV-vis spectroscopy methods:	https://www.doi.org/10.1016/j.jct.2016.06.018
Interactions of some amino acids and glycine peptides with aqueous sodium dodecyl sulfate and cetyltrimethylammonium bromide at T 1/4 298.15 K: a volumetric approach:	https://www.doi.org/10.1016/j.jct.2003.09.010
Densities and Speeds of Sound of Antibiotic Drug Chloramphenicol with [illegible] Aqueous Medium at T = (288.15 318.15) K: A Volumetric, Ultrasonic, and UV Absorption Study:	https://www.doi.org/10.1021/acs.jced.6b00168
Solubility of the Proteinogenic α-Amino Acids in Water, Ethanol, and Ethanol–Water Mixtures:	https://www.doi.org/10.1021/acs.jced.7b00486
Interactions in l-alanine/l-proline/l-valine/l-leucine aqueous KCl/KNO3 systems at different temperatures: An isentropic compressibility study:	https://www.doi.org/10.1016/j.tca.2008.10.023
Ultrasonic Velocities and Densities of L-Phenylalanine, L-Leucine, L-Glutamic Acid, and L-Proline + 2 mol·L-1 Aqueous NaCl and 2 mol*L-1 Aqueous NaNO3 Solutions from (298.15 to 323.15) K:	https://www.doi.org/10.1021/je900909s
Densities and Speeds of Sound in L-Leucine/L-Isoleucine + Aqueous KCl/KNO3 Systems at (298.15 to 323.15) K:	https://www.doi.org/10.1021/je200146j
Interaction of homologous series of amino acids with sarcosine in presence of denaturant: Volumetric and calorimetric approach:	https://www.doi.org/10.1016/j.jct.2013.09.009
Interactions of Saccharides in Aqueous Glycine and Leucine Solutions at Different Temperatures (293.15 313.15) K: A Viscometric Study:	https://www.doi.org/10.1021/je500647a
Volumetric, compressibility and viscometric studies on sodium cholate/sodium deoxycholate amino acid interactions in aqueous medium:	https://www.doi.org/10.1016/j.tca.2015.02.014
Thermodynamic Study of Some Amino Acids, 2-Aminopropanoic Acid, 2-Amino-3-methylbutanoic Acid, 2-Amino-4-methylpentanoic Acid, and 2-Amino-3-phenylpropanoic Acid in Aqueous Saccharide Solutions at Different Temperatures: Volumetric and Ultrasonic Study:	https://www.doi.org/10.1021/je100857s
Thermodynamics of the interactions of some amino acids and peptides with dodecyltrimethylammonium bromide and tetradecyltrimethylammonium bromide:	https://www.doi.org/10.1016/j.jct.2013.11.001
Densities, Partial Molar Volumes, and Heat Capacities of Glycine, L-Alanine, and L-Leucine in Aqueous Magnesium Chloride Solutions at Different Temperatures:	https://www.doi.org/10.1021/je034168m
Viscosity studies of L-alanine, L-proline, L-valine and L-leucine in aqueous solutions at different temperatures:	https://www.doi.org/10.1016/j.jct.2008.07.019
Surface tension and UV-visible investigations of aggregation and adsorption behavior of NaC and NaDC in water-amino acid mixtures:	https://www.doi.org/10.1016/j.fluid.2015.03.012
Interaction of some hydrophobic amino acids, peptides, and protein with aqueous 3-chloro-1,2-propanediol and 3-chloro-1-propanol: Biophysical studies:	https://www.doi.org/10.1016/j.jct.2010.11.015
Molecular interactions between some amino acids and a pharmaceutically active ionic liquid domiphen DL-mandelic acid in aqueous medium at temperatures from 293.15 K to 313.15 K:	https://www.doi.org/10.1016/j.jct.2019.06.002

Legend

chs:	Standard solid enthalpy of combustion
cpg:	Ideal gas heat capacity
gf:	Standard Gibbs free energy of formation

hf:	Enthalpy of formation at standard conditions
hfs:	Solid phase enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
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
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume