

Sucrose

Other names:

(+)-Sucrose
(2R,3R,4S,5S,6R)-2-(((2S,3S,4S,5R)-3,4-dihydroxy-2,5-bis(hydroxymethyl)tetrahydrofuran-
(<>alpha)-D-Glucosido)-<>beta-D-fructofuranoside
(\wedge <>alpha \wedge -D-Glucosido)- \wedge <>beta \wedge -D-fructofuranoside
.alpha.-trehalose
.beta.-D-fructofuranosyl .alpha.-D-glucopyranoside
4-O-.beta.-D-galactopyranosyl-D-glucose
Amerfond
Beet sugar
Cane sugar
Confectioner's sugar
D-(+)-Saccharose
D-(+)-Sucrose
D-(+)-lactose
D-Sucrose
D-trehalose
Fructofuranoside, <>alpha-D-glucopyranosyl, <>beta-D
Fructofuranoside, \wedge <>alpha \wedge -D-glucopyranosyl, \wedge <>beta \wedge -D
Glucopyranoside, <>beta-D-fructofuranosyl, <>alpha-D
Glucopyranoside, \wedge <>beta \wedge -D-fructofuranosyl, \wedge <>alpha \wedge -D
Granulated sugar
Microse
NCI-C56597
NSC 406942
Rock candy
Saccharose
Saccharum
Sugar
Table sugar
White sugar
alpha,alpha-trehalose
lactose
<>alpha-D-Glucopyranoside, <>beta-D-fructofuranosyl
<>alpha-D-Glucopyranosyl <>beta-D-fructofuranoside
<>beta-D-Fructofuranoside, <>alpha-D-glucopyranosyl
<>beta-D-Fructofuranosyl <>alpha-D-glucopyranoside
 \wedge <>alpha \wedge -D-Glucopyranoside, \wedge <>beta \wedge -D-fructofuranosyl
 \wedge <>alpha \wedge -D-Glucopyranosyl \wedge <>beta \wedge -D-fructofuranoside
 \wedge <>beta \wedge -D-Fructofuranoside, \wedge <>alpha \wedge -D-glucopyranosyl
 \wedge <>beta \wedge -D-Fructofuranosyl \wedge <>alpha \wedge -D-glucopyranoside

Inchi:	InChI=1S/C12H22O11/c13-1-4-6(16)8(18)9(19)11(21-4)23-12(3-15)10(20)7(17)5(2-14)22		
InchiKey:	CZMRCDWAGMRECN-SFOFJGFUSA-N		
Formula:	C12H22O11		
SMILES:	OCC1OC(OC2(CO)OC(CO)C(O)C2O)C(O)C(O)C1O		
Mol. weight [g/mol]:	342.30		
CAS:	57-50-1		

Physical Properties

Property code	Value	Unit	Source
chs	-5643.40 ± 1.80	kJ/mol	NIST Webbook
chs	-5644.17	kJ/mol	NIST Webbook
chs	-5637.40 ± 1.70	kJ/mol	NIST Webbook
chs	-5664.38 ± 0.69	kJ/mol	NIST Webbook
gf	-1320.10	kJ/mol	Joback Method
hf	-1917.41	kJ/mol	Joback Method
hfs	-2221.20	kJ/mol	NIST Webbook
hfus	63.65	kJ/mol	Joback Method
hvap	184.54	kJ/mol	Joback Method
log10ws	0.79		Estimated Solubility Method
log10ws	0.79		Aqueous Solubility Prediction Method
logp	-5.396		Crippen Method
mcvol	222.790	ml/mol	McGowan Method
pc	4627.70	kPa	Joback Method
ss	360.20	J/mol×K	NIST Webbook
ss	392.40	J/mol×K	NIST Webbook
tb	1290.10	K	Joback Method
tc	1782.75	K	Joback Method
tf	424.40	K	Heat capacity and transition behavior of sucrose by standard, fast scanning and temperature-modulated calorimetry
tf	464.05	K	Artificial neural networks as a supporting tool for compatibility study based on thermogravimetric data
tf	462.00 ± 3.00	K	NIST Webbook
tf	461.00 ± 6.00	K	NIST Webbook
tf	458.65	K	Aqueous Solubility Prediction Method
vc	0.784	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	970.71	J/mol×K	1290.10	Joback Method
cpg	998.85	J/mol×K	1372.21	Joback Method
cpg	1028.30	J/mol×K	1454.32	Joback Method
cpg	1060.01	J/mol×K	1536.42	Joback Method
cpg	1094.94	J/mol×K	1618.53	Joback Method
cpg	1134.04	J/mol×K	1700.64	Joback Method
cpg	1178.26	J/mol×K	1782.75	Joback Method
cps	451.00	J/mol×K	318.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	416.60	J/mol×K	293.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	424.30	J/mol×K	298.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	429.40	J/mol×K	303.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	437.50	J/mol×K	308.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	445.50	J/mol×K	313.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides

cps	408.50	J/mol×K	288.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	466.20	J/mol×K	323.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	472.60	J/mol×K	328.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	482.50	J/mol×K	333.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	490.30	J/mol×K	338.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	498.80	J/mol×K	343.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	506.70	J/mol×K	348.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	513.90	J/mol×K	353.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	522.00	J/mol×K	358.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides

cps	424.30	J/mol×K	298.15	NIST Webbook
cps	430.00	J/mol×K	300.00	NIST Webbook
cps	425.50	J/mol×K	298.15	NIST Webbook
cps	422.50	J/mol×K	297.00	NIST Webbook
hfust	46.20	kJ/mol	459.00	NIST Webbook

Sources

- Analysing the molecular interactions of sucrose in aqueous triammonium Volumetric and ultrasonic studies at ambient solute and solvent temperatures** <https://www.doi.org/10.1016/j.jct.2018.05.004>
- McGraw-Hill Encyclopedia of Glycometric aqueous sucrose solutions at different temperatures: a supporting tool for compatibility study** <https://www.doi.org/10.1016/j.tca.2014.05.014>
- Viscosity of some saccharides in Aqueous Solutions of Phosphate-Based Inorganic Salts:** <http://link.springer.com/article/10.1007/BF02311772>
- Influence of NH4Br on Solvation Behavior of Polyhydroxy Solutes in Aqueous Solutions of Carbohydrates on the Surface Activity of Ionic Liquids** <https://www.doi.org/10.1016/j.tca.2017.12.015>
- Effect of the concentration of urea on the apparent viscosity of aqueous systems based on tetrahydrofuran** <https://www.doi.org/10.1021/acs.jced.5b00845>
- Transport Behavior of Different Carbohydrates and Purine Nucleotides in Urea Mixtures at Different Temperatures** <http://onschallenge.wikispaces.com/file/view/AqueousDataset002.xlsx/351826032/AqueousDa>
- Volumetric and Viscosity Properties of MgSO4/CuSO4 in Sucrose + Water Aqueous Systems** <https://www.doi.org/10.1021/je500886a>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2017.08.027>
- Densities and partial volumes at infinite dilution of side-chain partial interactions in polyisobutylene** <https://www.doi.org/10.1016/j.fluid.2016.11.001>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1021/je2000099>
- NIST Webbook: Urea Mixtures at Different Temperatures** <http://webbook.nist.gov/cgi/cbook.cgi?ID=C57501&Units=SI>
- Volumetric and Viscosity Properties of MgSO4/CuSO4 in Sucrose + Water Aqueous Systems** <https://www.doi.org/10.1021/je700732u>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.fluid.2014.05.020>
- Densities and partial volumes at infinite dilution of side-chain partial interactions in polyisobutylene** <https://www.doi.org/10.1021/je100703r>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.tca.2011.10.013>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2004.12.015>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2004.12.004>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2004.07.030>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.fluid.2016.05.024>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1021/je400264a>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.tca.2013.11.006>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1021/je800622e>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2009.07.015>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.fluid.2014.12.038>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.fluid.2016.12.024>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.fluid.2017.12.006>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1021/je0602061>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2014.05.015>
- Effect of organic solvents on the effect of organic solvents** <http://pubs.acs.org/doi/abs/10.1021/ci990307l>
- Solubilities of Three Flavonoids in Different Natural Deep Eutectic Solvents at T = 283.15 K and 298.15 K** <https://www.doi.org/10.1021/acs.jced.6b00552>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1016/j.jct.2004.07.002>
- Effect of Citrate Salts on the Volumetric and Ultrasonic Properties of Sucrose in Aqueous Solutions at Temperatures T = 283.15 K and 298.15 K** <https://www.doi.org/10.1021/acs.jced.8b00370>
- Effect of organic solvents on the effect of organic solvents** <https://www.doi.org/10.1021/je700190m>

Effect of hydrophilic additives on volumetric and viscosity properties of binary and ternary aqueous solutions at T = 288.15 K: Aqueous Solutions of Ammonium Phosphate Salts at Different Temperatures through Density and Speed of Sound Measurements:
Liquid-Liquid Equilibria of Aqueous Biphasic Systems Composed of Sugars, Hydroxy Acids, Sulfonates and Solutes in Aqueous Mixtures of Sugars in Water and Their Dependence on Temperature and Concentration. Heat Capacity and Viscosity at different temperatures by standard, fast scanning and temperature dependence of the heat capacities in the solid state of 18 Mono-Peptide Components. Studies of Aqueous Ionic Liquid-Carbohydrate Extracts of Alkaloids Codeine and Caffeine with Volumetric, Ultrasound and viscometric studies of solute-solute and solute-solvent interactions in aqueous binary diffusion coefficients of aqueous solutions of sucrose in water at temperatures from 298.05 to 318.15 K: Solute and solute-solvent interactions of Aqueous Biphasic Systems of Hydrophilic Ionic Liquids - Success for Determination of Equilibrium of Celllobiose, Sucrose, and Maltose Monohydrate in Non-Liquid. Experimental study of the ternary systems containing sucrose in Aqueous Solutions. Volumetric, Viscosity, Bi-coefficients of Carbohydrates in Aqueous Systems of Hydrophilic Ionic Liquids at 298.15 K and 318.15 K: Partial molar volumes, expansibilities and compressibilities of glycylglycine aqueous solution properties of sugars at pressures 288.15 K: Volumetric and Acoustic Properties of Aqueous Carbohydrate Polymer Binary Solution Binary Diffusion Coefficients for Six Sugars at 0.1 MPa and Temperature Correlation (273.15 to 353.2) Water Activity in Aqueous Solutions Studies on volumetric properties of some saccharides in aqueous side Drug, polysaccharide mixtures - drug mixtures formed by 200 g of Methanol, 1 K: Water and ethanol Measured ethanol at 0.5 Single and Complex Sugars in Water: Interactions in (glycylglycine + 1M aqueous glucose / 1M aqueous Dextrose) Systems at (298.15 and 323.15) Viscosities of (L-Proline + Aqueous Salting out Effect of Ionic Liquids 6-Propyl-3-Benzyloimidazolium Chloride Quaternary Pyridinium Cations of Solutions of 6-Propyl-3-Acetyl-6-Solutions: liquid Equilibrium Study on the Interactions of Human Melanin in Pyridinium, EC18, and Sucrose Water Systems at Acid at T = 298.15 (303.15 and 308.15) K and 0.1 M-benzyl-3-methylimidazolium bromide on the Viscosity and ultrasonic properties of ternary (succinic acid + protein ionic liquids) mixtures at different temperatures of aqueous mixtures of L-proline and sucrose at different temperatures of aqueous glucose and sucrose solutions at 298.15 K: Characterization of the Reaction Mixture To Produce Sucrose Fructose Inorganic-Free Media: Separation of water in activity and viscosity measurement for ternary solutions of sucrose and inorganic acids and inorganic salts at 298.15 K (298.15 to 318.15) Primary and Ternary Subsystems with 15% Chloride in Aqueous Solutions at (288.15 to 318.15) K:

- <https://www.doi.org/10.1016/j.jct.2011.12.020>
<https://www.doi.org/10.1021/acs.jced.8b01157>
http://pubs.acs.org/doi/suppl/10.1021/ci034243x/suppl_file/ci034243xsi20040112_053635.txt
<https://www.doi.org/10.1016/j.fluid.2016.02.030>
<https://www.doi.org/10.1021/je100212p>
<https://www.doi.org/10.1016/j.jct.2012.11.001>
<https://www.doi.org/10.1016/j.tca.2014.05.029>
<https://www.doi.org/10.1016/j.jct.2008.08.007>
<https://www.doi.org/10.1021/acs.jced.7b00719>
<https://www.doi.org/10.1021/acs.jced.8b00678>
<https://www.doi.org/10.1016/j.jct.2013.05.012>
<https://www.doi.org/10.1021/je060092t>
<https://www.doi.org/10.1016/j.jct.2013.09.008>
<https://www.doi.org/10.1021/je700729p>
<https://www.doi.org/10.1021/acs.jced.5b00914>
<https://www.doi.org/10.1016/j.fluid.2016.08.025>
<https://www.doi.org/10.1021/je100211s>
<https://www.doi.org/10.1016/j.jct.2012.02.016>
https://en.wikipedia.org/wiki/Joback_method
<https://www.doi.org/10.1016/j.tca.2010.11.013>
<https://www.doi.org/10.1016/j.jct.2012.06.016>
<https://www.doi.org/10.1021/acs.jced.6b00232>
<https://www.doi.org/10.1021/je0601816>
<https://www.doi.org/10.1021/acs.jced.9b00694>
<https://www.doi.org/10.1016/j.jct.2008.11.009>
<https://www.doi.org/10.1021/acs.jced.5b01102>
<https://www.doi.org/10.1021/je700062x>
<https://www.doi.org/10.1016/j.tca.2011.03.024>
<https://www.doi.org/10.1021/je2000205>
<https://www.doi.org/10.1021/acs.jced.7b00682>
<https://www.doi.org/10.1021/je049582g>
<https://www.doi.org/10.1021/acs.jced.6b00695>
<https://www.doi.org/10.1021/je200226z>
<https://www.doi.org/10.1016/j.jct.2015.09.021>
<https://www.doi.org/10.1016/j.jct.2015.05.002>
<https://www.doi.org/10.1016/j.tca.2008.10.021>
<https://www.doi.org/10.1021/acs.jced.8b01026>
<https://www.doi.org/10.1021/je200421s>
<https://www.doi.org/10.1016/j.jct.2017.08.023>
<https://www.doi.org/10.1016/j.jct.2019.01.024>
<https://www.doi.org/10.1021/je0503608>
<https://www.doi.org/10.1021/je5001523>

Legend

chs:	Standard solid enthalpy of combustion
cpg:	Ideal gas heat capacity
cps:	Solid phase 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
hfust:	Enthalpy of fusion at a given temperature
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
ss:	Solid phase molar entropy at standard conditions
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume

Latest version available from:

<https://www.chemeo.com/cid/18-498-0/Sucrose.pdf>

Generated by Cheméo on 2024-04-09 15:04:18.641375354 +0000 UTC m=+14964307.561952669.

Cheméo (<https://www.chemeo.com>) is the biggest free database of chemical and physical data for the process industry.