Maltose

Other names:	.alpha.-trehalose
	4-(«alpha»-D-Glucopyranosido)-«alpha»-glucopyranose
	4-(«alpha»-D-Glucosido)-D-glucose
	4-(Â«alphaÂ»-D-Glucopyranosido)-Â«alphaÂ»-glucopyranose
	4-(Â«alphaÂ»-D-Glucosido)-D-glucose
	4-O-.alpha.-D-glucopyranosyl-D-glucose
	4-O-«alpha»-d-Glucopyranosyl-d-glucose
	4-O-Â«alphaÂ»-d-Glucopyranosyl-d-glucose
	Advantose 100
	Cextromaltose
	D-(+)-Maltose
	D-Glucose, 4-O-«alpha»-D-glucopyranosyl-
	D-Glucose, 4-O-Â«alphaÂ»-D-glucopyranosyl-
	D-Maltose
	D-trehalose
	Finetose
	Finetose F
	Malt sugar
	Maltobiose
	Maltodiose
	Maltos
	Martos-10
	Sunmalt
	Sunmalt S
	alpha,alpha-trehalose
	«alpha»-Malt sugar
	Â«alphaÂ»-Malt sugar
Inchi:	InChI=1S/C12H22O11/c13-1-3-5(15)6(16)9(19)12(22-3)23-10-4(2-14)21-11(20)8(18)7(10
InchiKey:	GUBGYTABKSRVRQ-GXGLMDGZSA-N
Formula:	C12H22O11
SMILES:	OCC1OC(OC2C(CO)OC(O)C(O)C2O)C(O)C(O)C1O
Mol. weight [g/mol]:	342.30
CAS:	69-79-4

Physical Properties

Property code	Value	Unit	Source

gf	-1334.42	kJ/mol	Joback Method
hf	-1959.15	kJ/mol	Joback Method
hfus	68.92	kJ/mol	Joback Method
hvap	185.55	kJ/mol	Joback Method
log10ws	0.36		Estimated Solubility Method
logp	-5.397		Crippen Method
mcvol	222.790	ml/mol	McGowan Method
pc	4311.22	kPa	Joback Method
tb	1289.46	K	Joback Method
tc	1783.82	K	Joback Method
tf	767.77	K	Joback Method
vc	0.777	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	889.71	J/mol×K	1289.46	Joback Method
cpg	874.12	J/mol×K	1371.85	Joback Method
cpg	848.56	J/mol×K	1454.25	Joback Method
cpg	812.80	J/mol×K	1536.64	Joback Method
cpg	766.60	J/mol×K	1619.03	Joback Method
cpg	709.75	J/mol×K	1701.43	Joback Method
cpg	641.99	J/mol×K	1783.82	Joback Method
cps	434.70	J/mol×K	300.00	NIST Webbook
cps	424.90	J/mol×K	293.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	436.10	J/mol×K	298.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	442.60	J/mol×K	303.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides

cps	452.00	J/mol×K	308.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	460.40	J/mol×K	313.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	470.90	J/mol×K	318.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	485.30	J/mol×K	323.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	394.80	J/mol×K	288.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	503.80	J/mol×K	333.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	515.00	J/mol×K	338.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	528.10	J/mol×K	343.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	542.20	J/mol×K	348.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides

cps	558.50	J/mol×K	353.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	585.60	J/mol×K	358.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	494.80	J/mol×K	328.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
dvisc	2.0238363e-08	Pa×s	767.77	Joback Method
dvisc	3.1497617e-09	Pa×s	854.72	Joback Method
dvisc	6.9115221e-10	Pa×s	941.67	Joback Method
dvisc	1.9598804e-10	Pa×s	1028.62	Joback Method
dvisc	6.7640490e-11	Pa×s	1115.56	Joback Method
dvisc	2.7226863e-11	Pa×s	1202.51	Joback Method
dvisc	1.2390430e-11	Pa×s	1289.46	Joback Method

Sources

Activity Coefficients and Volumetric Properties for the NaI + Maltose + Water System at 298.15 K:	https://www.doi.org/10.1021/je700366w
Osmotic properties of carbohydrate aqueous solutions:	https://www.doi.org/10.1016/j.fluid.2016.02.030
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
Volumetric, viscometric and 1H NMR spectroscopic studies in (polyhydroxy solute + L-ASCORBIC ACID + H2O) ternary solutions:	https://www.doi.org/10.1016/j.jct.2017.04.001
Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides:	https://www.doi.org/10.1016/j.jct.2008.08.007
Rheological and time domain 1H NMR relaxation studies of some polyhydroxy solutes in presence of L-glycine:	https://www.doi.org/10.1016/j.jct.2016.04.006
Investigations to explore interactions in (polyhydroxy solute + L-ascorbic acid + H2O) solutions at different temperatures: Calorimetric and viscometric approach at (293.15 and 318.15) K:	https://www.doi.org/10.1016/j.jct.2016.07.020
Interactions of Saccharides in Aqueous Glycine and Leucine Solutions at Different Temperatures: Apparent molar volumes and apparent molar heat capacities:	https://www.doi.org/10.1021/je500647a
Study of aqueous D(+)-cellobiose, D(+)-maltose, and sucrose at temperatures from 278.15 K to 393.15 K and at the pressure 0.35 MPa:	https://www.doi.org/10.1016/j.jct.2004.12.004
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C69794&Units=SI
Extractions of Alkaloids Codeine and Caffeine with [Bmim][BF4]/Carbohydrate Aqueous Biphasic Systems as a Novel Class of Liquid−Liquid Extraction Systems:	https://www.doi.org/10.1021/acs.jced.8b00678
Liquid−Liquid Equilibria of Aqueous Biphasic Systems Composed of 1-Butyl-3-methylimidazolium Tetrafluoroborate + Sucrose/Maltose + Water:	https://www.doi.org/10.1021/je100212p
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Activity Coefficients and Volumetric Properties for the NaBr + Maltose + Water System at 298.15 K:	https://www.doi.org/10.1021/je050064v
Solubility of Xylose, Mannose, Maltose Monohydrate, and Trehalose Dihydrate in Ethanol Water Solutions:	https://www.doi.org/10.1021/je300885g

Partial Molar Volumes and Isentropic Compressibilities of Some Saccharides in Aqueous Solutions of Phosphate-Based Inorganic Salts:	https://www.doi.org/10.1021/je400977r
Viscosities of Some Saccharides in Aqueous Solutions of Different Temperatures:	https://www.doi.org/10.1021/acs.jced.5b00845
Estimated Solubility Method:	http://pubs.acs.org/doi/suppl/10.1021/ci034243x/suppl_file/ci034243xsi20040112_053635.txt
Evaluation of the effect of ionic-liquids as soluting-out agents on the solubility of carbohydrates in aqueous solutions:	https://www.doi.org/10.1016/j.fluid.2017.12.006
Densities and Viscosities of Polyhydroxy Solutes in Aqueous Tetraethylammonium Bromide Solutions at Different Temperatures:	https://www.doi.org/10.1021/acs.jced.5b00940
Molecular Interactions of Saccharides and Their Derivatives with Thiamine HCl and Pyridoxine HCl Vitamins in Aqueous Solutions: Calorimetric, Viscometric, and NMR Spectroscopic Studies:	https://www.doi.org/10.1021/acs.jced.7b00937
Influence of Phosphate-Based Salts on Enthalpy of Dilution and Isentropic Compressibility Properties of Saccharides and Their Derivatives in Aqueous Solutions:	https://www.doi.org/10.1021/acs.jced.8b00681

Legend

cpg:	Ideal gas heat capacity
cps:	Solid phase heat capacity
dvisc:	Dynamic viscosity
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
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
vc:	Critical Volume