Lactose

Other names:	(+)-Lactose
	4-(«beta»-D-Galactosido)-D-glucose
	4-(Â«betaÂ»-D-Galactosido)-D-glucose
	4-O-.beta.-D-galactopyranosyl-D-glucose
	AHL
	Aletobiose
	D-(+)-lactose
	D-Glucose, 4-O-«beta»-D-galactopyranosyl-
	D-Glucose, 4-O-Â«betaÂ»-D-galactopyranosyl-
	D-Lactose
	D-glucose, 4-(beta-d-galactosido)-
	Fast-Flo Lactose
	Fast-flo
	Galactinum
	Lactin
	Lactin (carbohydrate)
	Lactobiose
	Lactose Fast-flo
	Milk sugar
	Osmolactan
	Pharmatose 21
	Saccharum lactin
	Tablettose
	Zeparox EP
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-SDWOOCBUSA-N
Formula:	C12H22O11
SMILES:	OCC1OC(OC2C(CO)OC(O)C(O)C2O)C(O)C(O)C1O
Mol. weight [g/mol]:	342.30
CAS:	63-42-3

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	-0.24		Aqueous Solubility Prediction Method
log10ws	-0.24		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	417.60	J/mol×K	300.00	NIST Webbook
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

Aqueous Solubility Prediction Method: http://onschallenge.wikispaces.com/file/view/AqueousDataset002.xlsx/351826032/AqueousDa

Estimated Solubility Method: http://pubs.acs.org/doi/suppl/10.1021/ci034243x/suppl_file/ci034243xsi20040112_053635.txt

McGowan Method: http://link.springer.com/article/10.1007/BF02311772

NIST Webbook: http://webbook.nist.gov/cgi/cbook.cgi?ID=C63423&Units=SI

Crippen Method: http://pubs.acs.org/doi/abs/10.1021/ci990307l

Volumetric behaviour of amino acids and their group contributions in aqueous lactose solutions at different temperatures:	https://www.doi.org/10.1016/j.jct.2010.08.004
Effect of fruit and milk sugars on solute-solvent interactions of diphenhydramine-hydrochloride drug in aqueous solutions in viewpoint of volumetric and transport properties:	https://www.doi.org/10.1016/j.jct.2017.12.013
Joback Method:	https://en.wikipedia.org/wiki/Joback_method

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