D-Ribose

Other names: (.+-.)-ribose
D-(-)-ribose
DL-ribose
ribose
ribose, D-

Inchi: InChI=1S/C5H10O5/c6-1-3(8)5(10)4(9)2-7/h1,3-5,7-10H,2H2/t3-,4+,5-/m0/s1

InchiKey: PYMYPHUHKUWMLA-LMVFSUKVSA-N

Formula: C5H10O5

SMILES: O=CC(O)C(O)C(O)CO

Mol. weight [g/mol]: 150.13

CAS: 50-69-1

Physical Properties

Property code	Value	Unit	Source
chs	-2345.80 ± 0.63	kJ/mol	NIST Webbook
chs	-2334.20 ± 4.60	kJ/mol	NIST Webbook
chs	-2347.59 ± 0.91	kJ/mol	NIST Webbook
chs	-2349.47 ± 0.95	kJ/mol	NIST Webbook
gf	-662.90	kJ/mol	Joback Method
hf	-856.87	kJ/mol	Joback Method
hfs	-1049.10 ± 1.10	kJ/mol	NIST Webbook
hfs	-1050.90 ± 0.71	kJ/mol	NIST Webbook
hfs	-1047.20 ± 1.70	kJ/mol	NIST Webbook
hfus	16.78	kJ/mol	Joback Method
hvap	99.00	kJ/mol	Joback Method
log10ws	1.41		Crippen Method
logp	-2.740		Crippen Method
mcvol	106.360	ml/mol	McGowan Method
pc	6588.38	kPa	Joback Method
tb	729.86	K	Joback Method
tc	900.63	K	Joback Method
tf	386.39	K	Joback Method
vc	0.391	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	303.13	J/mol×K	729.86	Joback Method
cpg	331.77	J/mol×K	900.63	Joback Method
cpg	327.65	J/mol×K	872.17	Joback Method
cpg	323.29	J/mol×K	843.71	Joback Method
cpg	318.67	J/mol×K	815.24	Joback Method
cpg	313.78	J/mol×K	786.78	Joback Method
cpg	308.60	J/mol×K	758.32	Joback Method
cps	183.20	J/mol×K	298.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	188.80	J/mol×K	303.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	193.90	J/mol×K	308.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	201.30	J/mol×K	313.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	209.00	J/mol×K	318.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	224.60	J/mol×K	323.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides

cps	245.10	J/mol×K	328.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	171.30	J/mol×K	288.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	179.40	J/mol×K	293.15	Temperature dependence of the heat capacities in the solid state of 18 mono-, di-, and poly-saccharides
cps	187.00	J/mol×K	303.00	NIST Webbook
dvisc	0.0000010	Pa×s	729.86	Joback Method
dvisc	0.0000024	Pa×s	672.62	Joback Method
dvisc	0.0000073	Pa×s	615.37	Joback Method
dvisc	0.0000276	Pa×s	558.12	Joback Method
dvisc	0.0001411	Pa×s	500.88	Joback Method
dvisc	0.0010983	Pa×s	443.64	Joback Method
dvisc	0.0157042	Pa×s	386.39	Joback Method

Sources

Osmotic properties of carbohydrate aqueous solutions:	https://www.doi.org/10.1016/j.fluid.2016.02.030
Viscometric studies on saccharides in aqueous magnesium chloride solutions at T= (288.15 to 318.15) K:	https://www.doi.org/10.1016/j.jct.2012.02.016
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Conductivities of 1-alkyl-3-methylimidazolium chloride ionic liquids in monosaccharide + water solutions at 298.15 K:	https://www.doi.org/10.1016/j.fluid.2011.11.028
Solving our effect of carbohydrates on the surface active ionic liquid 1-decyl-3-methylimidazolium bromide in aqueous solutions:	https://www.doi.org/10.1016/j.jct.2017.08.027
Volumetric and Viscosity Properties of Monosaccharides in Aqueous Amino Acid Solutions at 298.15 K:	https://www.doi.org/10.1021/je050412t
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Solvation behaviour and partial molar properties of monosaccharides in aqueous protic ionic liquid solutions:	https://www.doi.org/10.1016/j.jct.2013.11.021
Densities and Speeds of Sound of D(+)-Glucose, D(-)-Fructose, D(+)-Xylose and D(-)-Ribose in Aqueous Solutions of Potassium Citrate Solutions at Different Temperatures:	https://www.doi.org/10.1021/acs.jced.5b00933
Viscosities of Some Saccharides in Aqueous Solutions of Potassium Chloride Solutions over Different Temperatures (293.15 313.15) K: A Volumetric Study:	https://www.doi.org/10.1021/acs.jced.5b00845
Joback Method:	https://en.wikipedia.org/wiki/Joback_method
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C50691&Units=SI
Studies on volumetric properties of some saccharides in aqueous Glycine and Leucine Solutions at Different Temperatures:	https://www.doi.org/10.1016/j.jct.2008.11.009
Interactions of Saccharides in Aqueous Solutions of Biologically Relevant Inorganic Salts: Volumes of Transfer of Saccharides and Methyl Glycosides with Lithium Chloride in Aqueous Solutions at (288.15 to 318.15) K:	https://www.doi.org/10.1021/je500647a https://www.doi.org/10.1021/je5001523

Effect of protic ionic liquid on the volumetric properties of ribose in aqueous solutions:	https://www.doi.org/10.1016/j.tca.2015.04.023
Volumetric and Viscometric Studies on Saccharide-Disodium Tetraborate (Borax) Interactions in Aqueous Solutions:	https://www.doi.org/10.1021/je400264a
Effect of sodium acetate on the volumetric behaviour of some mono-, di-, and tri-saccharides in aqueous solutions over temperature range (288.15 to 318.15) K:	https://www.doi.org/10.1016/j.jct.2009.07.015
Partial Molar Volumes and Isentropic Compressibilities of Some Saccharides in Aqueous Solutions of Leucine at Different Temperatures:	https://www.doi.org/10.1021/je400977r
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
McGowan Method:	http://link.springer.com/article/10.1007/BF02311772
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
Exploration of solute-solvent interactions in aqueous mixtures of monosaccharides and triammonium citrate (TAC) at different temperatures: Volumetric and acoustic approach:	https://www.doi.org/10.1016/j.jct.2019.105877
A conductance study to analyze the effect of organic solvents on carbohydrate-surfactant system at variable temperatures:	https://www.doi.org/10.1016/j.fluid.2014.05.020
Temperature dependence of the volumetric and acoustic behaviour of aqueous mixtures of monosaccharides and trilithium citrate:	https://www.doi.org/10.1016/j.jct.2017.05.032

Legend

chs:	Standard solid enthalpy of combustion
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
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
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
vc:	Critical Volume