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Thermophysical Properties of Aqueous Solutions Used as Secondary Working Fluids

Doctoral Thesis
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The results for aqueous solutions of lithium chloride and potassium formate, salts that may be used at quite low temperatures, are also given as these types have been added since Melinder (1997) and Melinder (1998a) were compiled.

Based on the work described in chapter 3, Table 4.1 gives basic thermophysical properties of aqueous solutions of ethyl alcohol.

The following symbols are used:

- t_F freezing point [°C] JÄÄTYMISPISTE
- c_A additive concentration [wt-%] LISÄAINE PITOISUUS PAINO-%
- t fluid temperature [°C] NESTEEN LÄMPÖTILA
- ρ density [kg/m³] TIHEYS
- c_p specific heat [J/kg K] OMINAISLÄMPÖKAPASITEETTI
- k thermal conductivity [W/m K] LÄMMÖNJOHTOKYKY
- μ dynamic viscosity [mPa s] DYNAAMINEN VISKOSITEETTI

Table 4.1. Basic thermophysical properties of ethyl alcohol

Chemical formula: C_2H_5OH; M = 46.07

Table 4.1. Basic thermophysical properties … (cont.)

t_F	c_A	t	ρ	c_p	k	μ
-10.92	20	40	958.8	4315	0.484	1.16
		30	963.8	4310	0.475	1.55
		20	968.8	4310	0.466	2.16
		10	972.5	4330	0.457	3.22
		0	975.7	4360	0.448	5.15
		-10	977.8	4385	0.439	9.7
		-10.9	978.0	4390	0.438	10.3
-15.45	25	40	950.5	4310	0.454	1.27
		30	957.0	4300	0.446	1.73
		20	962.0	4290	0.438	2.45
		10	967.0	4280	0.430	3.71
		0	971.0	4270	0.422	6.10
		-10	974.5	4260	0.414	11
		-15.45	975.5	4254	0.410	17
-20.47	30	40	940.8	4240	0.423	1.36
		30	948.0	4240	0.417	1.86
		20	954.0	4230	0.411	2.68
		10	960.0	4200	0.405	4.08
		0	965.4	4170	0.398	6.80
		-10	969.5	4120	0.391	12.2
		-20	972.9	4050	0.385	25
		-20.47	973.0	4045	0.385	26