Supporting Information for

Thermodynamically Traceable Calorimetric Results for Dilute Aqueous Potassium Chloride Solutions at Temperatures from (273.15 to 373.15) K. Part 1. The Quantities Associated with the Partial Molar Enthalpy

Jaakko I. Partanen,[*,†] Lauri J. Partanen,[‡] and Kari P. Vahteristo[†]

[†]Department of Chemical Technology, LUT School of Engineering Science, Lappeenranta University of Technology, P.O. Box 20, FI-53851 Lappeenranta, Finland. [‡] Department of Chemistry and Materials Science; Aalto University of Helsinki, P.O. Box 16100, FI-00076 Aalto, Finland

* E-mail: jpartane@lut.fi.

AUTHOR INFORMATION

Corresponding author

E-mail: jpartane@lut.fi.

Table S1. Heats of Dilution Reported by Richards and Rowe[1] (RiRo20NaCl and RiRo20, measured at 293.15 K), Wood et al.[2] (WRB25), Leung and Millero[3] (LeMi30), Mayrath and Wood[4,5] (MaWo100, MaWo75NaCl, and MaWo100NaCl) and the Resulting Errors (see Equation 14) When These Values Are Predicted Using Parametrization PI or PII[a]

$(m_i/m^o)^b$	$(m_f/m^o)^b$	$\Delta H_{m,dil}$ / J·mol^{-1}	$e_{H,PI}$ / J·mol^{-1}	$e_{H,PII}$ / J·mol^{-1}	Dataset
2.2204	0.1388	1584	−810	−96.6	RiRo20NaCl[c]
2.2204	0.2775	1501	–809	–143	RiRo20NaCl[c]
2.2204	0.5551	1275	–746	–175	RiRo20NaCl[c]
2.2204	1.1102	815	–522	–141	RiRo20NaCl[c]
2.2204	0.1388	1446	−884	−205	RiRo20
2.2204	0.2775	1371	−884	−251	RiRo20
2.2204	0.5551	1150	–832	–289	RiRo20
2.2204	1.1102	752	−568	−207	RiRo20
1.000	0.1264	434	−296	−26.8	WRB25
1.000	0.1212	428	−300	−29.6	WRB25
1.000	0.1211	428	−301	−30.4	WRB25
1.000	0.1457	444	−288	−24.6	WRB25
1.000	0.1482	453	−278	−15.7	WRB25
2.998	0.3354	1492	−1139	−302	WRB25
3.000	0.3236	1511	−1129	−289	WRB25
1.06362	0.19912	361	−279	−29.7	LeMi30
1.06362	0.23258	354	−279	−39.4	LeMi30
1.06362	0.34704	329	−258	−50.1	LeMi30
1.06362	0.41434	314	−231	−42.9	LeMi30
1.06362	0.52571	261	−206	−49.2	LeMi30
1.06362	0.65034	197	−169	−48.7	LeMi30
1.06362	0.74074	156	−134	−39.7	LeMi30
1.06362	0.86124	94.4	−89.0	−29.6	LeMi30

Table S1 continues on the next page.

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$(m_i/m^o)^b$	$(m_f/m^o)^b$	$\Delta H_{m,dil}$ / J·mol^{-1}	$e_{H,PI}$ / J·mol^{-1}	$e_{H,PII}$ / J·mol^{-1}	Dataset
0.07010	0.03503	−196	35.4		MaWo75NaCl^c
0.08248	0.04121	–210	35.4		MaWo75NaCl^c
0.1383	0.06907	−236	56.9		MaWo75NaCl^c
0.1627	0.18124	–236^d			MaWo75NaCl^c
0.2692	0.1343	−262	102		MaWo75NaCl^c
0.3168	0.1580	–240	144		MaWo75NaCl^c
0.5104	0.2540	−278	180		MaWo75NaCl^c
0.6018	0.2993	–280	214		MaWo75NaCl^c
0.9260	0.4591	−282	354		MaWo75NaCl^c
1.094	0.5413	–252	470		MaWo75NaCl^c
0.031	0.0155	−208	38.0		MaWo100
0.0621	0.031	−246	90.1		MaWo100
0.1244	0.0621	−332	125		MaWo100
0.25	0.1244	−382	250		MaWo100
0.502	0.250	−431	483		MaWo100
1.02	0.502	−474	1053		MaWo100
0.01450	0.00725	−179	–5.0		MaWo100NaCl^e
0.01778	0.00884	−168	24.6		MaWo100NaCl^e
0.02900	0.0145	−189	50.2		MaWo100NaCl^e
0.03557	0.01778	−226	36.4		MaWo100NaCl^e
0.04184	0.02092	−231	51.2		MaWo100NaCl^e
0.05802	0.02900	−262	64.8		MaWo100NaCl^e
0.07118	0.03557	−284	74.1		MaWo100NaCl^e

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$(m_i/m^o)^b$	$(m_f/m^o)^b$	$\Delta H_{m,dil}$ / J·mol^{-1}	$e_{H,PI}$ / J·mol^{-1}	$e_{H,PII}$ / J·mol^{-1}	Dataset
0.07520	0.03760	−277	89.7		MaWo100NaCl[e]
0.08374	0.04184	−289	96.1		MaWo100NaCl[e]
0.1162	0.05802	−313	133		MaWo100NaCl[e]
0.1425	0.07118	−343	147		MaWo100NaCl[e]
0.1506	0.07520	−345	157		MaWo100NaCl[e]
0.1677	0.08374	−347	181		MaWo100NaCl[e]
0.2328	0.1162	−382	236		MaWo100NaCl[e]
0.2856	0.1425	−408	277		MaWo100NaCl[e]
0.3020	0.1506	−415	291		MaWo100NaCl[e]
0.3365	0.1677	−422	326		MaWo100NaCl[e]
0.4676	0.2328	−454	450		MaWo100NaCl[e]
0.5742	0.2856	−478	553		MaWo100NaCl[e]
0.6087	0.3020	−480	595		MaWo100NaCl[e]
0.6771	0.3365	−497	659		MaWo100NaCl[e]
0.9432	0.4676	−539	961		MaWo100NaCl[e]
1.161	0.5742	−574	1233		MaWo100NaCl[e]

[a] The data sets are abbreviated as in the corresponding tables of the previous papers.[6,7] The acronym tells the first three letters of the author's surname in the case of only one author, first two letters of the authors' surname in the case of two authors, and just the first letter of the surnames in the case of three or more authors. The number in the acronym represents the temperature measured and the given quantity is (T–273.15)/ K.

[b] $m^o = 1$ mol·kg^{-1}.

[c] Measured for NaCl solutions instead of KCl solutions and parametrizations PI and PII of ref 6 were used for RiRo20NaCl and PI of ref 6 was used for MaWo75NaCl.

[d] This misprint point has not been considered.

[e] Measured for NaCl solutions instead of KCl solutions and parametrization PI is given in Table 4 of the present study.

Table S2. The Partial Molar Enthalpies of Potassium Chloride (Symbol 2) at Infinite Dilution that Were Used in Calculations of the Relative Apparent Enthalpies for KCl Solutions for the Error Plots of the Present Study and the Corresponding Results (Denoted by Asterisk) for Sodium Chloride in NaCl Solutions

T / K	Reference	$H^{\infty}_{\mathrm{m},2}/(\mathrm{J \cdot mol^{-1}})$
285.65	Lange and Monheim[8]	19422[a]
298.15	Kilday[9]	17177[b]
298.15	Sanahuja and Cesari[10]	17206[c]
298.15	Zverev and Krestov[11]	17206[d]
298.15	Abrosimov and Krestov[12]	17183[d]
298.15*	Dadgar and Taherian[13]	3833[b,e]
298.15	Dadgar and Taherian[13]	16951[f]
298.15	Bazlova et al.[14]	17349[b]
298.15*	Bazlova et al.[14]	4023[e]
298.15*	Benjamin[15]	3866[g]
298.15*	Hubert et al.[16]	3824[h]
298.15	Lange and Monheim[8]	17216[i]
298.15	Wüst and Lange[17]	17216[j]
318.15*	Hubert et al.[16]	1423[h]
333.15*	Hubert et al.[16]	–234[k]

[a] Determined here using PI from all data except the three most dilute points.

[b] Determined here using PI from all data at this temperature.

[c] Taken from the original study.

[d] Determined here using PI when the points at $m = 0.27755\ \mathrm{mol \cdot kg^{-1}}$ were omitted.

[e] Determined here using PI for the NaCl set with the parameters from ref 6.

[f] Determined here using PI and only the outlier where $m = 0.02\ \mathrm{mol \cdot kg^{-1}}$ was omitted.

[g] Determined here using PI from the NaCl data where $m < 0.21\ \mathrm{mol \cdot kg^{-1}}$ with the parameters from ref 6.

[h] Taken from Table 7 of ref 6 for this NaCl set.

[i] Determined here using PI from the data where $m < 0.22\ \mathrm{mol \cdot kg^{-1}}$.

[j] Determined here using PI for the set of Lange and Monheim (see footnote *i*).

[k] Determined from the results of the most dilute point in this NaCl set where $m = 0.1766\ \mathrm{mol \cdot kg^{-1}}$.

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