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PARAMETERS FOR THE CALCULATION OF OSMOTIC AND ACTIVITY COEFFICIENTS AND TABLES OF THESE COEFFICIENTS FOR TWENTY-TWO AQUEOUS MIXTURES OF TWO ELECTROLYTES AT 25°C

R. M. Rush

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R. M. Rush

APRIL 1969

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R. M. Rush

ABSTRACT

Parameters are given for the calculation of osmotic and activity coefficients for 31 aqueous mixtures of two electrolytes at 25°C. In addition, tables of osmotic and activity coefficients are given for 22 of these mixtures.

INTRODUCTION

In several recent publications[1-4] we have utilized equations

(1) R. M. Rush and J. S. Johnson, J. Phys. Chem., 72, 767 (1968).

(2) R. M. Rush and R. A. Robinson, J. Tenn. Acad. Sci., 43, 22 (1968).

(3) Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., 72, 4048 (1968).

(4) Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., in press.

suggested by Scatchard[5] for the representation of osmotic and activity

(5) G. Scatchard, J. Amer. Chem. Soc., 83, 2636 (1961).

coefficients in various three-component systems (two electrolytes and water). The coefficients of these equations were obtained by the method of least squares using the ORGLS program of Busing and Levy.[6] In the

(6) W. R. Busing and H. A. Levy, Oak Ridge National Laboratory Report TM-271 (1962).

process of developing the computer program and as a service for other investigators, we have analyzed various published data on the osmotic coefficients in three-component mixtures. The present report collects these results as well as our own and makes them available to others. In all cases the parameters were derived from osmotic coefficients obtained by the isopiestic method.

In addition to the parameters, tables containing values of the osmotic coefficient and the logarithm of the activity coefficients are given at even values of the ionic strength and ionic strength fraction. These were calculated using the parameters as listed.

It should be emphasized that this is in no way a critical evaluation of the data. In several cases more than one set of data for the same system were analyzed. No attempt was made to correlate the results or to decide which was the best. The parameters are presented as a representation of the osmotic coefficient data, as published, and as a means of calculating the activity coefficients in these systems.

METHOD

The equations used are given in Table I. The $\underline{b}$-parameters of equations 3 and 4 were derived from the observed osmotic coefficients (Φ) using equation 1 with ionic strength ($\underline{I}$) and ionic strength fraction ($\underline{y}_B$) as the independent variables. These same parameters can then be used to calculate the activity coefficients ($\underline{\gamma}_{\pm}$) of either component using equations 5 and 6 (note that these equations give logarithms to the base e).

The equations in Table I may appear quite formidable with regard to hand calculations. However, the following relationships should be noted

$$\alpha_J = \frac{\nu_J \underline{m}_J}{\underline{I}_J} (\phi_J - 1)$$

$$(\underline{A}_J + \alpha_J) = \frac{\nu_J \underline{m}_J}{\underline{I}_J} \ln \gamma_{\underline{+}J(J)}$$

where ϕ_J is the osmotic coefficient of pure J and $\gamma_{\underline{+}J(J)}$ is the activity coefficient of component J in pure J both taken at the ionic strength of the mixture in question. It is thus possible to calculate the contributions of the pure components to ϕ and $\ln \gamma_{\underline{+}}$ with equations 1, 5, and 6 using <u>either</u> the analytical expressions for α and $(\underline{A} + \alpha)$ (equations 2 and 7 in Table I) <u>or</u> the above equations and tabular data on the pure components such as those given by Robinson and Stokes.[7] The latter

(7) R. A. Robinson and R. H. Stokes, "Electrolyte Solutions," 2nd. ed., revised, Butterworth and Co. Ltd., London, 1965.

alternative greatly simplifies hand calculations.

DISCUSSION

The parameters for those systems which we have analyzed are given at the end of this report. Each page contains complete information on a given set of data. This includes the parameters used to represent the limiting two-component data (single electrolyte) and results in repetition of much of this information. The advantage of having all the parameters for a given set of data on one page was felt to outweigh the disadvantage or repetition.

The concentration range in most cases includes the complete range of the data, although, in some few cases, only a selected range of concentrations was used in the analysis. The parameters were derived from data

in the range indicated and should not be used for calculations at higher concentrations. Extrapolations to lower concentrations than those indicated are less likely to be in error because the equations include a Debye-Hückel term.

In some few cases the three-component data extend to higher ionic strengths than the two-component data. Since the equations require values for the two-component systems at the ionic strength of the mixture, this results in an extrapolation of the two-component data which is risky and in some cases may involve a supersaturated solution. Where this extrapolation occurs, a notation is made under "Remarks" and the parameters should not be used for calculations at higher ionic strengths. This is also reflected in the fact that the tables are not extended beyond what we feel is the usable limit.

Where a parameter is given the value "0", this parameter was fixed at zero and not allowed to vary.

In all cases a fit was obtained allowing all five $\underline{b}$-parameters to vary. In addition, fits were obtained with fewer parameters varied (i.e., some of the five were fixed at zero). The sets of parameters listed are those with the least number of parameters which do not represent a significant increase in the standard deviation over that obtained with all five parameters varied. The standard deviation (σ) is defined as

$$\sigma = [\Sigma \underline{d}^2/(\underline{n}-\underline{k})]^{1/2}$$

where $\underline{d}$ is the deviation (observed minus calculated osmotic coefficient), $\underline{n}$ the number of observations, $\underline{k}$ the number of variable parameters, and the summation is over all observations.

If the a- and b-parameters are given in the reference cited, this is so noted under "Remarks" and the reference should be consulted for the source of the two-component parameters. For other cases the two-component parameters were derived from one of the following sources: (1) the tabular data of Robinson and Stokes;[7] (2) the parameters given by Lietzke and Stoughton[8] (it should be noted that the power-series

(8) M. H. Lietzke and R. W. Stoughton, J. Phys. Chem., 66, 508 (1962).

coefficients given in this reference, B, C, and D, are multiplied by the factor $-2/z_+z_-$ to obtain the coefficients $a_J^{(i)}$); and (3) other sources as noted under "Remarks." Parameter sets derived from (1) may be identified by the fact that $\underset{\sim}{a} = 1.5$; those from (2) have values other than 1.5.

Where the osmotic coefficients are given in the reference cited, this is so noted under "Remarks." In all other cases the osmotic coefficients were derived from the published isopiestic molalities with the osmotic coefficient for the reference electrolyte obtained from the data of Robinson and Stokes.[7] In each case the reference electrolyte is identified under "Remarks."

The tables following each data sheet give values of the osmotic coefficient ("PHI"), the logarithm to the base ten of the activity coefficient ("LOG GAMMA"), and, in most cases, the logarithm to the base ten of the ratio of the activity coefficient in the mixture to that of the pure component at the same ionic strength ("LOG(G/GO)"). These are given at even values of the ionic strength ("I") and at equal intervals of the ionic strength fraction ("Y(B)"). The values in the tables are given to more significant figures than are justified (a temptation hard to resist when using a computer). In general, values of the osmotic

coefficient and logartihm of the activity coefficient are good to not more than three decimal places. Where there are two investigations of the same system, an inspection of the tables reveals that differences in the osmotic coefficient are, with few exceptions, less than 0.01 while differences in log $\gamma_{\pm}$ are less than 0.01 at low concentrations but may be as high as 0.03 at high concentrations.

Two additional references should be mentioned. In both cases parameters are given which are the same as those in Table I. They were not, however, obtained by the procedure described in this report. The parameters are tabulated below for the sake of completeness and the references cited should be consulted for more details.

In the first report[9] mixtures involving the ions Na^+, Cu^{++}, Cl^-, and ClO_4^- were studied. The b-parameters are given below.

(9) R. L. Yoest, Ph.D. Thesis, Massachusetts Institute of Technology, 1964.

	NaCl(A) - NaClO$_4$(B)	NaClO$_4$(A) - Cu(ClO$_4$)$_2$(B)	NaCl(A) - CuCl$_2$(B)	CuCl$_2$(A) - Cu(ClO$_4$)$_2$(B)
$b_{AB}^{(0,1)}$	0.06876	0.06993	0.02727	0.12247
$b_{AB}^{(0,2)}$	-0.00987	-0.00951	-0.02107	-0.02928
$b_{AB}^{(0,3)}$	-	-	-	0.0000661
$b_{AB}^{(1,2)}$	-0.000337	0.001803	-0.00513	0.00588
$b_{AB}^{(1,3)}$	-	-	-	-0.000426
$b_{AB}^{(2,3)}$	-	-	-	0.001352

The term $b_{AB}^{(2,3)}$ is not included in the equations in Table I. The following terms should be added to the terms in brackets in Table I.

Equation (1) $\underline{b}_{AB}^{(2,3)}\ \underline{I}^3\ \underline{y}_A\underline{y}_B\ (\underline{y}_A-\underline{y}_B)^2$

Equation (5) $\underline{b}_{AB}^{(2,3)}\ \underline{I}^3(\underline{y}_B - \frac{10}{3}\ \underline{y}_B^2 + \frac{8}{3}\ \underline{y}_B^3)$

Equation (6) same with $\underline{y}_B$ replaced by $\underline{y}_A$

In the second paper[10] mixtures involving six alkali metal halide

(10) A. K. Covington, T. H. Lilley, and R. A. Robinson, J. Phys. Chem., 72, 2759 (1968).

salt pairs were studied. The b-parameters are given below.

	$\underline{b}_{AB}^{(0,1)}$	$\underline{b}_{AB}^{(0,2)}$
NaCl-KCl	-0.0253	-0.00299
NaBr-KBr	-0.0238	-0.0040
NaCl-NaBr	0.0038	
KCl-KBr	0.0026	
KCl-NaBr	-0.0469	-0.0059
NaCl-KBr	-0.0026	

TABLE I

(1) $$\phi = 1 + \frac{I}{\nu_A m_A + \nu_B m_B}\left[\alpha_A y_A + \alpha_B y_B + \beta^{(0)}_{AB} y_A y_B + \beta^{(1)}_{AB} y_A y_B (y_A - y_B)\right]$$

(2) $$\alpha_J = \frac{2S}{\mathbf{a}_J^3 I}\left[1 + \mathbf{a}_J\sqrt{I} - \frac{1}{1 + \mathbf{a}_J\sqrt{I}} - 2\ln(1 + \mathbf{a}_J\sqrt{I})\right] + a_J^{(1)} I + a_J^{(2)} I^2 + a_J^{(3)} I^3 + a_J^{(4)} I^4$$

(3) $$\beta^{(0)}_{AB} = b^{(0,1)}_{AB} I + b^{(0,2)}_{AB} I^2 + b^{(0,3)}_{AB} I^3$$

(4) $$\beta^{(1)}_{AB} = b^{(1,2)}_{AB} I^2 + b^{(1,3)}_{AB} I^3$$

(5) $$\ln \gamma_{\pm A} = \frac{I_A}{\nu_A m_A}\left[(A_A + \alpha_A) + (\alpha_B - \alpha_A) y_B + \beta^{(0)}_{AB} y_B + (B^{(0)}_{AB} - \beta^{(0)}_{AB}) y_B^2 + \beta^{(1)}_{AB} y_B \right.$$
$$\left. + 3(B^{(1)}_{AB} - \beta^{(1)}_{AB}) y_B^2 - 2(2B^{(1)}_{AB} - \beta^{(1)}_{AB}) y_B^3\right]$$

(6) $$\ln \gamma_{\pm B} = \frac{I_B}{\nu_B m_B}\left[(A_B + \alpha_B) + (\alpha_A - \alpha_B) y_A + \beta^{(0)}_{AB} y_A + (B^{(0)}_{AB} - \beta^{(0)}_{AB}) y_A^2 - \beta^{(1)}_{AB} y_A \right.$$
$$\left. - 3(B^{(1)}_{AB} - \beta^{(1)}_{AB}) y_A^2 + 2(2B^{(1)}_{AB} - \beta^{(1)}_{AB}) y_A^3\right]$$

(7) $$(A_J + \alpha_J) = \frac{2S\sqrt{I}}{1 + \mathbf{a}_J\sqrt{I}} + 2a_J^{(1)} I + \frac{3}{2} a_J^{(2)} I^2 + \frac{4}{3} a_J^{(3)} I^3 + \frac{5}{4} a_J^{(4)} I^4$$

(8) $$B^{(0)}_{AB} = b^{(0,1)}_{AB} I + \frac{1}{2} b^{(0,2)}_{AB} I^2 + \frac{1}{3} b^{(0,3)}_{AB} I^3$$

(9) $$B^{(1)}_{AB} = \frac{1}{2} b^{(1,2)}_{AB} I^2 + \frac{1}{3} b^{(1,3)}_{AB} I^3$$

$I = \frac{1}{2}\Sigma\, m_i Z_i^2$ (ionic strength; summation over all ions, i, with valence Z_i)

m = moles solute per kilogram of water (molality)

ν_J = moles of ions per mole of solute J

$y_J = I_J / I$ (ionic strength fraction of component J)

S = Debye-Hückel slope for $\ln \gamma_\pm$ of a uniunivalent electrolyte

$\mathbf{a}_J$ = distance-of-closest-approach parameter for component J

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KCl	NaBr	7
KCl	KBr	7
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$CuCl_2$	$Cu(ClO_4)_2$	6

Component A: $HClO_4$

Component B: $LiClO_4$

Reference: R. M. Rush and J. S. Johnson, J. Phys. Chem., 72, 767 (1968).

Concentration range: I = 1.7 to 4.5 Temperature: 25°

$b_{AB}^{(0,1)}$	0.0308
$b_{AB}^{(0,2)}$	-0.00637
$b_{AB}^{(0,3)}$	0
$b_{AB}^{(1,2)}$	0
$b_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0006

Two-component parameters:

	A	B
α	1.5	1.5
$a^{(1)}$	0.2588	0.3434
$a^{(2)}$	0.01164	-0.01570
$a^{(3)}$	0.00600	0.00678
$a^{(4)}$	-0.000740	-0.000666
std. dev. in Φ	0.0005	0.0007
S	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference.

HCL04(A)-LICL04(B) MIXTURES - REV2, 01 02

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0451	-.08567	-.06421	0	-.00663
1.0000	.2000	1.0528	-.08206	-.06300	.00361	-.00541
1.0000	.4000	1.0596	-.07839	-.06173	.00728	-.00414
1.0000	.6000	1.0654	-.07467	-.06040	.01100	-.00282
1.0000	.8000	1.0703	-.07089	-.05902	.01478	-.00144
1.0000	1.0000	1.0741	-.06706	-.05759	.01861	0
2.0000	0	1.2092	.02026	.05624	0	-.00400
2.0000	.2000	1.2188	.02486	.05660	.00460	-.00364
2.0000	.4000	1.2270	.02968	.05718	.00942	-.00307
2.0000	.6000	1.2337	.03472	.05798	.01446	-.00227
2.0000	.8000	1.2390	.03998	.05900	.01973	-.00124
2.0000	1.0000	1.2428	.04547	.06025	.02521	0
3.0000	0	1.4038	.15717	.20125	0	.00627
3.0000	.2000	1.4101	.16045	.19899	.00328	.00402
3.0000	.4000	1.4150	.16423	.19724	.00706	.00227
3.0000	.6000	1.4184	.16851	.19599	.01134	.00102
3.0000	.8000	1.4205	.17328	.19523	.01611	.00026
3.0000	1.0000	1.4212	.17855	.19497	.02139	0
4.0000	0	1.6232	.31576	.36206	0	.02222
4.0000	.2000	1.6219	.31582	.35585	.00005	.01601
4.0000	.4000	1.6197	.31675	.35052	.00099	.01068
4.0000	.6000	1.6167	.31858	.34607	.00281	.00623
4.0000	.8000	1.6129	.32129	.34251	.00552	.00267
4.0000	1.0000	1.6081	.32488	.33984	.00912	0
5.0000	0	1.8542	.48724	.53058	0	.04148
5.0000	.2000	1.8421	.48263	.51952	-.00461	.03042
5.0000	.4000	1.8302	.47940	.50984	-.00784	.02074
5.0000	.6000	1.8186	.47755	.50154	-.00968	.01244
5.0000	.8000	1.8071	.47709	.49463	-.01014	.00553
5.0000	1.0000	1.7959	.47802	.48910	-.00922	0

Component A: $HClO_4$

Component B: $NaClO_4$

Reference: R. M. Rush and J. S. Johnson, J. Phys. Chem., 72, 767 (1968).

Concentration range: I = 0.6 to 13.9 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0609
$\underline{b}_{AB}^{(0,2)}$	-0.03213
$\underline{b}_{AB}^{(0,3)}$	0.000319
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	-0.000513
std. dev. in Φ	0.0022

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.23770	0.00894
$\underline{a}^{(2)}$	0.03666	0.01102
$\underline{a}^{(3)}$	-0.00204	-0.000950
$\underline{a}^{(4)}$	0.000046	0.0000236
std. dev. in Φ	0.0022	0.0030
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolytes were NaCl and H_2SO_4. Parameters and osmotic coefficients given in reference.

MGCL04(A),NACL04(B) MIXTURES - REV2, 01 02 03 13

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0434	-.08880	-.13145	0	.06474
1.0000	.2000	1.0204	-.09841	-.14493	-.00961	.05126
1.0000	.4000	.9962	-.10773	-.15814	-.01894	.03804
1.0000	.6000	.9709	-.11677	-.17109	-.02797	.02510
1.0000	.8000	.9444	-.12553	-.18377	-.03673	.01242
1.0000	1.0000	.9167	-.13400	-.19619	-.04520	0
2.0000	0	1.2123	.01932	-.07815	0	.13221
2.0000	.2000	1.1566	-.00439	-.10665	-.02371	.10371
2.0000	.4000	1.1013	-.02689	-.13410	-.04621	.07626
2.0000	.6000	1.0464	-.04823	-.16051	-.06754	.04985
2.0000	.8000	.9914	-.06842	-.18592	-.08773	.02444
2.0000	1.0000	.9364	-.08749	-.21036	-.10681	0
3.0000	0	1.4080	.15745	-.00666	0	.20106
3.0000	.2000	1.3106	.11541	-.05132	-.04204	.15641
3.0000	.4000	1.2181	.07617	-.09365	-.08129	.11408
3.0000	.6000	1.1298	.03962	-.13377	-.11783	.07396
3.0000	.8000	1.0451	.00568	-.17176	-.15177	.03597
3.0000	1.0000	.9633	-.02575	-.20773	-.18320	0
4.0000	0	1.6245	.31514	.07286	0	.27010
4.0000	.2000	1.4768	.25073	.01130	-.06441	.20854
4.0000	.4000	1.3415	.19147	-.04627	-.12367	.15097
4.0000	.6000	1.2169	.13711	-.10006	-.17802	.09718
4.0000	.8000	1.1016	.08745	-.15031	-.22769	.04693
4.0000	1.0000	.9939	.04224	-.19724	-.27290	0
5.0000	0	1.8574	.48752	.15586	0	.33823
5.0000	.2000	1.6513	.39692	.07697	-.09061	.25933
5.0000	.4000	1.4683	.31460	.00415	-.17292	.18651
5.0000	.6000	1.3051	.24014	-.06305	-.24738	.11931
5.0000	.8000	1.1587	.17309	-.12507	-.31443	.05729
5.0000	1.0000	1.0261	.11300	-.18236	-.37453	0
6.0000	0	2.1029	.67140	.23940	0	.40445
6.0000	.2000	1.8309	.55092	.14309	-.12048	.30815
6.0000	.4000	1.5958	.44277	.05526	-.22863	.22032
6.0000	.6000	1.3922	.34617	-.02486	-.32523	.14020
6.0000	.8000	1.2148	.26037	-.09804	-.41104	.06702
6.0000	1.0000	1.0583	.18458	-.16506	-.48682	0
7.0000	0	2.3581	.86436	.32126	0	.46793
7.0000	.2000	2.0129	.71047	.20776	-.15388	.35442
7.0000	.4000	1.7218	.57389	.10544	-.29046	.25210
7.0000	.6000	1.4765	.45338	.01307	-.41097	.15974
7.0000	.8000	1.2685	.34773	-.07055	-.51663	.07611
7.0000	1.0000	1.0893	.25570	-.14665	-.60866	0
8.0000	0	2.6205	1.06448	.39977	0	.52790
8.0000	.2000	2.1950	.87379	.26955	-.19069	.39769
8.0000	.4000	1.8446	.70638	.15348	-.35811	.28162
8.0000	.6000	1.5568	.56040	.04973	-.50408	.17786
8.0000	.8000	1.3188	.43404	-.04353	-.63044	.08460
8.0000	1.0000	1.1182	.32548	-.12813	-.73900	0
9.0000	0	2.8881	1.27029	.47359	0	.58374
9.0000	.2000	2.3757	1.03949	.32742	-.23080	.43757
9.0000	.4000	1.9630	.83899	.19856	-.43130	.30871
9.0000	.6000	1.6322	.66620	.08441	-.60409	.19456
9.0000	.8000	1.3652	.51852	-.01763	-.75177	.09252
9.0000	1.0000	1.1441	.39335	-.11015	-.87695	0

Component A: LiCl

Component B: NaCl

Reference: R. A. Robinson and C. K. Lim, Trans. Faraday Soc., 49, 1144 (1953).

Concentration range: I = 2.0 to 6.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0616
$\underline{b}_{AB}^{(0,2)}$	-0.0225
$\underline{b}_{AB}^{(0,3)}$	0.00143
$\underline{b}_{AB}^{(1,2)}$	-0.00323
$\underline{b}_{AB}^{(1,3)}$	0.000736
std. dev. in Φ	0.0009

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.20046	0.03684
$\underline{a}^{(2)}$	0.01750	0.02108
$\underline{a}^{(3)}$	0	-0.001304
$\underline{a}^{(4)}$	-0.000074	0
std. dev. in Φ	0.0019	0.0006
$\underline{S}$	-1.17082	-1.17082

Remarks: See following reference. Reference electrolyte was LiCl.

LICL(A)-NACL(B) MIXTURES - ROBINSON (1953) - 01 02 03 12 13

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/GO) A	LOG(G/GO) B
1.0000	0	1.0162	-.11065	-.13515	0	.04575
1.0000	.2000	1.0032	-.11589	-.14451	-.00523	.03639
1.0000	.4000	.9867	-.12088	-.15377	-.01023	.02713
1.0000	.6000	.9727	-.12562	-.16293	-.01497	.01798
1.0000	.8000	.9550	-.13011	-.17197	-.01946	.00893
1.0000	1.0000	.9355	-.13435	-.18090	-.02369	0
2.0000	0	1.1439	-.03379	-.08716	0	.08678
2.0000	.2000	1.1149	-.04575	-.10531	-.01196	.06863
2.0000	.4000	1.0846	-.05689	-.12310	-.02311	.05084
2.0000	.6000	1.0528	-.06717	-.14050	-.03338	.03344
2.0000	.8000	1.0189	-.07655	-.15746	-.04276	.01648
2.0000	1.0000	.9828	-.08498	-.17394	-.05119	0
3.0000	0	1.2886	.06608	-.02004	0	.12513
3.0000	.2000	1.2411	.04611	-.04673	-.01997	.09644
3.0000	.4000	1.1953	.02765	-.07272	-.03842	.07245
3.0000	.6000	1.1450	.01085	-.09789	-.05522	.04728
3.0000	.8000	1.1956	-.00416	-.12209	-.07023	.02309
3.0000	1.0000	1.0447	-.01723	-.14517	-.08331	0
4.0000	0	1.4467	.18005	.05796	0	.16250
4.0000	.2000	1.3705	.15110	.02270	-.02896	.12725
4.0000	.4000	1.3116	.12424	-.01150	-.05581	.09305
4.0000	.6000	1.2456	.09982	-.04433	-.08023	.06022
4.0000	.8000	1.1804	.07815	-.07545	-.10190	.02909
4.0000	1.0000	1.1158	.05957	-.10455	-.12048	0
5.0000	0	1.6148	.30411	.14350	0	.20017
5.0000	.2000	1.5247	.26556	.09948	-.03855	.15616
5.0000	.4000	1.4389	.22937	.05682	-.07474	.11349
5.0000	.6000	1.3518	.19618	.01614	-.10793	.07282
5.0000	.8000	1.2700	.16663	-.02190	-.13748	.03477
5.0000	1.0000	1.1921	.14135	-.05667	-.16276	0
6.0000	0	1.7869	.43506	.23422	0	.23905
6.0000	.2000	1.6765	.38676	.18113	-.04830	.18597
6.0000	.4000	1.5664	.34053	.12958	-.09453	.13441
6.0000	.6000	1.4605	.29747	.08066	-.13759	.08550
6.0000	.8000	1.3606	.25868	.03549	-.17638	.04032
6.0000	1.0000	1.2696	.22526	-.00484	-.20980	0

Component A: LiCl

Component B: NaCl

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 37, 2773 (1963).

Concentration range: I = 2.4 to 5.9 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0592
$\underline{b}_{AB}^{(0,2)}$	-0.0267
$\underline{b}_{AB}^{(0,3)}$	0.00298
$\underline{b}_{AB}^{(1,2)}$	0.00663
$\underline{b}_{AB}^{(1,3)}$	-0.00041
std. dev. in Φ	0.0022

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.20046	0.03684
$\underline{a}^{(2)}$	0.01750	0.02108
$\underline{a}^{(3)}$	0	-0.001304
$\underline{a}^{(4)}$	-0.000074	0
std. dev. in Φ	0.0019	0.0006
$\underline{S}$	-1.17082	-1.17082

Remarks: See preceding reference. Reference electrolyte was NaCl.

LICL(A)-NACL(B) MIXTURES - KIRGINTSEV (1963) - 01 02 03 12 13

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
1.0000	0	1.0162	-.11065	-.13501	0	.04589
1.0000	.2000	1.0092	-.11582	-.14492	-.00517	.03598
1.0000	.4000	.9863	-.12095	-.15446	-.01031	.02644
1.0000	.6000	.9719	-.12606	-.16363	-.01541	.01727
1.0000	.8000	.9542	-.13114	-.17245	-.02048	.00846
1.0000	1.0000	.9355	-.13618	-.18090	-.02553	0
2.0000	0	1.1459	-.03379	-.08547	0	.08847
2.0000	.2000	1.1157	-.04519	-.10576	-.01140	.06818
2.0000	.4000	1.0843	-.05654	-.12472	-.02275	.04922
2.0000	.6000	1.0510	-.06786	-.14239	-.03408	.03155
2.0000	.8000	1.0168	-.07918	-.15879	-.04539	.01515
2.0000	1.0000	.9828	-.09052	-.17394	-.05673	0
3.0000	0	1.2866	.06608	-.01521	0	.12997
3.0000	.2000	1.2436	.04777	-.04631	-.01831	.09887
3.0000	.4000	1.1944	.02937	-.07479	-.03671	.07040
3.0000	.6000	1.1433	.01079	-.10069	-.05529	.04448
3.0000	.8000	1.0926	-.00803	-.12413	-.07411	.02104
3.0000	1.0000	1.0447	-.02718	-.14517	-.09326	0
4.0000	0	1.4467	.18005	.06770	0	.17224
4.0000	.2000	1.3844	.15462	.02546	-.02543	.13000
4.0000	.4000	1.3164	.12865	-.01271	-.05140	.09184
4.0000	.6000	1.2464	.10196	-.04698	-.07810	.05757
4.0000	.8000	1.1762	.07436	-.07753	-.10569	.02702
4.0000	1.0000	1.1158	.04568	-.10455	-.13438	0
5.0000	0	1.6148	.30411	.16008	0	.21678
5.0000	.2000	1.5359	.27187	.10656	-.03224	.16324
5.0000	.4000	1.4467	.23821	.05848	-.06590	.11516
5.0000	.6000	1.3506	.20277	.01549	-.10134	.07216
5.0000	.8000	1.2713	.16521	-.02278	-.13890	.03389
5.0000	1.0000	1.1921	.12515	-.05667	-.17896	0
6.0000	0	1.7869	.43506	.25975	0	.26459
6.0000	.2000	1.6953	.39695	.19509	-.03811	.19992
6.0000	.4000	1.5894	.35595	.13691	-.07911	.14174
6.0000	.6000	1.4784	.31147	.08460	-.12359	.08944
6.0000	.8000	1.3693	.26287	.03756	-.17219	.04240
6.0000	1.0000	1.2696	.20956	-.00484	-.22550	0

Component A: LiCl

Component B: KCl

Reference: R. A. Robinson and C. K. Lim, Trans. Faraday Soc., 49, 1144 (1953).

Concentration range: I = 2.0 to 5.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.0253
$\underline{b}_{AB}^{(0,2)}$	-0.0316
$\underline{b}_{AB}^{(0,3)}$	0.00176
$\underline{b}_{AB}^{(1,2)}$	-0.0132
$\underline{b}_{AB}^{(1,3)}$	0.00198
std. dev. in Φ	0.0012

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.20046	-0.06408
$\underline{a}^{(2)}$	0.01750	0.05244
$\underline{a}^{(3)}$	0	-0.01124
$\underline{a}^{(4)}$	-0.000074	0.000918
std. dev. in Φ	0.0019	0.0010
$\underline{S}$	-1.17082	-1.17082

Remarks: See following reference. Reference electrolyte was LiCl.

LICL(A)-KCL(B) - ROBINSON AND LIM (1953) - 01 02 03 12 13

			LOG GAMMA		LOG(G/GO)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0162	-.11065	-.17516	0	.04199
1.0000	.2000	.9872	-.12369	-.18343	-.01303	.03372
1.0000	.4000	.9613	-.13618	-.19178	-.02552	.02537
1.0000	.6000	.9379	-.14811	-.20019	-.03745	.01696
1.0000	.8000	.9164	-.15947	-.20865	-.04881	.00850
1.0000	1.0000	.8962	-.17024	-.21715	-.05959	0
2.0000	0	1.1439	-.03379	-.16744	0	.07232
2.0000	.2000	1.0828	-.06170	-.18146	-.02791	.05831
2.0000	.4000	1.0308	-.08773	-.19581	-.05395	.04396
2.0000	.6000	.9862	-.11179	-.21039	-.07800	.02938
2.0000	.8000	.9473	-.13375	-.22508	-.09996	.01469
2.0000	1.0000	.9122	-.15351	-.23977	-.11972	0
3.0000	0	1.2886	.06608	-.14270	0	.09952
3.0000	.2000	1.1902	.02079	-.16172	-.04529	.08050
3.0000	.4000	1.1091	-.02096	-.18156	-.08704	.06066
3.0000	.6000	1.0420	-.05881	-.20184	-.12489	.04038
3.0000	.8000	.9858	-.09239	-.22218	-.15846	.02004
3.0000	1.0000	.9375	-.12130	-.24222	-.18737	0
4.0000	0	1.4467	.18005	-.10983	0	.12693
4.0000	.2000	1.3066	.11527	-.13388	-.06479	.10287
4.0000	.4000	1.1924	.05556	-.15948	-.12450	.07727
4.0000	.6000	1.1001	.00180	-.18575	-.17826	.05100
4.0000	.8000	1.0254	-.04512	-.21180	-.22517	.02495
4.0000	1.0000	.9644	-.08432	-.23675	-.26437	0
5.0000	0	1.6148	.30411	-.07159	0	.15272
5.0000	.2000	1.4316	.21912	-.10042	-.08499	.12390
5.0000	.4000	1.2824	.14016	-.13182	-.16395	.09249
5.0000	.6000	1.1629	.06896	-.16409	-.23515	.06022
5.0000	.8000	1.0693	.00725	-.19550	-.29686	.02882
5.0000	1.0000	.9977	-.04325	-.22431	-.34736	0

Component A: LiCl

Component B: KCl

Reference: B. B. Owen and T. F. Cooke, J. Amer. Chem. Soc., 59, 2273 (1937).

Concentration range: I = 1.0 to 3.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.0850
$\underline{b}_{AB}^{(0,2)}$	0
$\underline{b}_{AB}^{(0,3)}$	-0.00321
$\underline{b}_{AB}^{(1,2)}$	-0.0209
$\underline{b}_{AB}^{(1,3)}$	0.0048
std. dev. in Φ	0.0009

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.20046	-0.06408
$\underline{a}^{(2)}$	0.01750	0.05244
$\underline{a}^{(3)}$	0	-0.01124
$\underline{a}^{(4)}$	-0.000074	0.000918
std. dev. in Φ	0.0019	0.0010
$\underline{S}$	-1.17082	-1.17082

Remarks: See preceding reference. Reference electrolyte was KCl.

LICL(A)-KCL(B) - OWEN AND COOKE (1937) - 01 03 12 13

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0162	-.11065	-.18566	0	.03148
1.0000	.2000	.9844	-.12538	-.19108	-.01473	.02607
1.0000	.4000	.9572	-.13967	-.19697	-.02901	.02017
1.0000	.6000	.9340	-.15347	-.20330	-.04282	.01384
1.0000	.8000	.9139	-.16676	-.21004	-.05611	.00711
1.0000	1.0000	.8962	-.17950	-.21715	-.06885	0
2.0000	0	1.1439	-.03379	-.18417	0	.05559
2.0000	.2000	1.0798	-.06374	-.19261	-.02996	.04716
2.0000	.4000	1.0267	-.09230	-.20266	-.05851	.03711
2.0000	.6000	.9825	-.11919	-.21405	-.08541	.02572
2.0000	.8000	.9451	-.14415	-.22651	-.11036	.01326
2.0000	1.0000	.9122	-.16690	-.23977	-.13312	0
3.0000	0	1.2886	.06608	-.16229	0	.07993
3.0000	.2000	1.1883	.01909	-.17412	-.04699	.06809
3.0000	.4000	1.1058	-.02564	-.18894	-.09171	.05328
3.0000	.6000	1.0383	-.06718	-.20584	-.13326	.03638
3.0000	.8000	.9831	-.10464	-.22390	-.17072	.01832
3.0000	1.0000	.9375	-.13711	-.24222	-.20319	0

Component A: LiCl

Component B: CsCl

Reference: R. A. Robinson, Trans. Faraday Soc., 49, 1147 (1953).

Concentration range: I = 2.0 to 6.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.1147
$\underline{b}_{AB}^{(0,2)}$	-0.0616
$\underline{b}_{AB}^{(0,3)}$	0.00521
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	-0.001445
std. dev. in ϕ	0.0018

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.20046	-0.1724
$\underline{a}^{(2)}$	0.01750	0.0834
$\underline{a}^{(3)}$	0	-0.01324
$\underline{a}^{(4)}$	-0.000074	0.000722
std. dev. in ϕ	0.0019	0.0059
$\underline{S}$	-1.17082	-1.17082

Remarks: See following reference. Reference electrolyte was NaCl.

LICL(A)-CSCL(B) - ROBINSON (1953) - 01 02 03 13

			LOG GAMMA		LOG(G/GO)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0162	-.11065	-.21670	0	.03803
1.0000	.2000	.9705	-.13176	-.22522	-.02110	.02952
1.0000	.4000	.9317	-.15235	-.23327	-.04169	.02147
1.0000	.6000	.8999	-.17243	-.24087	-.06178	.01387
1.0000	.8000	.8748	-.19202	-.24802	-.08137	.00672
1.0000	1.0000	.8565	-.21113	-.25474	-.10047	0
2.0000	0	1.1439	-.03379	-.24847	0	.05053
2.0000	.2000	1.0511	-.07712	-.26157	-.04333	.03743
2.0000	.4000	.9765	-.11847	-.27310	-.08468	.02590
2.0000	.6000	.9195	-.15792	-.28312	-.12413	.01588
2.0000	.8000	.8796	-.19555	-.29173	-.16176	.00727
2.0000	1.0000	.8563	-.23144	-.29900	-.19765	0
3.0000	0	1.2886	.06608	-.26239	0	.05014
3.0000	.2000	1.1443	-.00187	-.27771	-.06794	.03482
3.0000	.4000	1.0330	-.06553	-.29012	-.13161	.02241
3.0000	.6000	.9530	-.12520	-.29988	-.19127	.01265
3.0000	.8000	.9025	-.18113	-.30726	-.24720	.00527
3.0000	1.0000	.8794	-.23360	-.31253	-.29967	0
4.0000	0	1.4467	.18005	-.26886	0	.04539
4.0000	.2000	1.2452	.08468	-.28479	-.09538	.02947
4.0000	.4000	1.0949	-.00342	-.29664	-.18348	.01761
4.0000	.6000	.9913	-.08489	-.30508	-.26494	.00917
4.0000	.8000	.9299	-.16036	-.31074	-.34041	.00352
4.0000	1.0000	.9064	-.23048	-.31425	-.41053	0
5.0000	0	1.6148	.30411	-.27242	0	.04063
5.0000	.2000	1.3516	.17887	-.28722	-.12524	.02583
5.0000	.4000	1.1599	.06450	-.29743	-.23961	.01562
5.0000	.6000	1.0312	-.04026	-.30430	-.34437	.00875
5.0000	.8000	.9566	-.13666	-.30909	-.44077	.00396
5.0000	1.0000	.9276	-.22596	-.31305	-.53007	0
6.0000	0	1.7889	.43506	-.27569	0	.03609
6.0000	.2000	1.4620	.27875	-.28673	-.15631	.02505
6.0000	.4000	1.2289	.13736	-.29370	-.29770	.01808
6.0000	.6000	1.0745	.00874	-.29875	-.42632	.01303
6.0000	.8000	.9840	-.10930	-.30405	-.54436	.00773
6.0000	1.0000	.9424	-.21892	-.31178	-.65398	0

Component A: LiCl

Component B: CsCl

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 40, 1280 (1966).

Concentration range: I = 2.1 to 7.2 Temperature: 25°

$b_{AB}^{(0,1)}$	-0.1042
$b_{AB}^{(0,2)}$	-0.0577
$b_{AB}^{(0,3)}$	0.00448
$b_{AB}^{(1,2)}$	-0.00881
$b_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0026

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$a^{(1)}$	0.20046	-0.1724
$a^{(2)}$	0.01750	0.0834
$a^{(3)}$	0	-0.01324
$a^{(4)}$	-0.000074	0.000722
std. dev. in Φ	0.0019	0.0059
S	-1.17082	-1.17082

Remarks: See preceding reference. Reference electrolyte was NaCl.

LICL(A)-CSCL(B) - KIRGINTSEV AND LUKYANOV (1966) - 01 02 03 12

			LOG GAMMA		LOG(G/GO)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0162	-.11065	-.21489	0	.03985
1.0000	.2000	.9712	-.13140	-.22330	-.02075	.03144
1.0000	.4000	.9332	-.15147	-.23149	-.04082	.02325
1.0000	.6000	.9017	-.17086	-.23946	-.06021	.01528
1.0000	.8000	.8762	-.18957	-.24721	-.07892	.00753
1.0000	1.0000	.8565	-.20761	-.25474	-.09695	0
2.0000	0	1.1439	-.03379	-.24558	0	.05342
2.0000	.2000	1.0524	-.07656	-.25760	-.04277	.04139
2.0000	.4000	.9796	-.11682	-.26896	-.08303	.03004
2.0000	.6000	.9238	-.15458	-.27964	-.12079	.01936
2.0000	.8000	.8832	-.18983	-.28966	-.15604	.00934
2.0000	1.0000	.8563	-.22257	-.29900	-.18878	0
3.0000	0	1.2886	.06608	-.25885	0	.05369
3.0000	.2000	1.1461	-.00118	-.27167	-.06726	.04086
3.0000	.4000	1.0378	-.06327	-.28345	-.12934	.02908
3.0000	.6000	.9597	-.12018	-.29418	-.18626	.01835
3.0000	.8000	.9082	-.17192	-.30388	-.23800	.00865
3.0000	1.0000	.8794	-.21849	-.31253	-.28457	0
4.0000	0	1.4467	.18005	-.26478	0	.04947
4.0000	.2000	1.2476	.08547	-.27672	-.09458	.03753
4.0000	.4000	1.1009	-.00074	-.28764	-.18079	.02661
4.0000	.6000	.9996	-.07859	-.29753	-.25864	.01672
4.0000	.8000	.9370	-.14807	-.30641	-.32813	.00785
4.0000	1.0000	.9064	-.20919	-.31425	-.38925	0
5.0000	0	1.6148	.30411	-.26760	0	.04545
5.0000	.2000	1.3546	.17984	-.27730	-.12427	.03576
5.0000	.4000	1.1663	.06735	-.28669	-.23676	.02636
5.0000	.6000	1.0394	-.03337	-.29578	-.33748	.01727
5.0000	.8000	.9634	-.12232	-.30457	-.42643	.00849
5.0000	1.0000	.9276	-.19949	-.31305	-.50360	0
6.0000	0	1.7889	.43506	-.26963	0	.04215
6.0000	.2000	1.4657	.28003	-.27519	-.15503	.03659
6.0000	.4000	1.2346	.14009	-.28219	-.29497	.02959
6.0000	.6000	1.0806	.01524	-.29062	-.41982	.02116
6.0000	.8000	.9882	-.09453	-.30048	-.52959	.01130
6.0000	1.0000	.9424	-.18921	-.31178	-.62427	0
7.0000	0	1.9642	.56973	-.27214	0	.03595
7.0000	.2000	1.5809	.38499	-.27034	-.18474	.03774
7.0000	.4000	1.3094	.21825	-.27304	-.35148	.03504
7.0000	.6000	1.1290	.06950	-.28023	-.50023	.02785
7.0000	.8000	1.0190	-.06125	-.29191	-.63098	.01617
7.0000	1.0000	.9586	-.17401	-.30809	-.74374	0
8.0000	0	2.1349	.70469	-.27563	0	.01908
8.0000	.2000	1.7010	.49424	-.26107	-.21044	.03364
8.0000	.4000	1.3970	.30398	-.25570	-.40070	.03901
8.0000	.6000	1.1956	.13391	-.25952	-.57077	.03519
8.0000	.8000	1.0700	-.01598	-.27252	-.72066	.02219
8.0000	1.0000	.9930	-.14568	-.29471	-.85036	0

Component A: LiCl

Component B: $LiNO_3$

Reference: R. A. Robinson and C. K. Lim, Trans. Faraday Soc., 49, 1144 (1953).

Concentration range: I = 2.0 to 10.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0787
$\underline{b}_{AB}^{(0,2)}$	-0.0156
$\underline{b}_{AB}^{(0,3)}$	0.000150
$\underline{b}_{AB}^{(1,2)}$	-0.0037
$\underline{b}_{AB}^{(1,3)}$	0.00035
std. dev. in Φ	0.0017

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.19630	0.17406
$\underline{a}^{(2)}$	0.02104	0.00552
$\underline{a}^{(3)}$	-0.000766	-0.001432
$\underline{a}^{(4)}$	-0.0000224	0.0000544
std. dev. in Φ	0.0020	0.0015
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was LiCl.

LICL(A)-LINO3(B) - ROBINSON AND LIM (1953) - 01 02 03 12 13

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/GO) A	LOG(G/GO) B
2.0000	0	1.1442	-.03434	-.02501	0	.05007
2.0000	.2000	1.1402	-.03509	-.03539	-.00075	.03970
2.0000	.4000	1.1333	-.03500	-.04560	-.00066	.02948
2.0000	.6000	1.1228	-.03405	-.05564	.00029	.01945
2.0000	.8000	1.1082	-.03222	-.06547	.00212	.00961
2.0000	1.0000	1.0888	-.02949	-.07509	.00484	0
3.0000	0	1.2901	.06618	.06886	0	.08067
3.0000	.2000	1.2750	.06084	.05186	-.00534	.06367
3.0000	.4000	1.2578	.05729	.03522	-.00889	.04703
3.0000	.6000	1.2371	.05559	.01903	-.01059	.03084
3.0000	.8000	1.2119	.05581	.00333	-.01037	.01514
3.0000	1.0000	1.1810	.05802	-.01181	-.00816	0
4.0000	0	1.4486	.18067	.16936	0	.11521
4.0000	.2000	1.4169	.16806	.14467	-.01261	.09053
4.0000	.4000	1.3847	.15845	.12066	-.02222	.06651
4.0000	.6000	1.3505	.15199	.09746	-.02868	.04332
4.0000	.8000	1.3124	.14884	.07524	-.03183	.02109
4.0000	1.0000	1.2687	.14915	.05415	-.03152	0
5.0000	0	1.6169	.30493	.27258	0	.15339
5.0000	.2000	1.5627	.28257	.23918	-.02236	.11999
5.0000	.4000	1.5113	.26461	.20684	-.04032	.08766
5.0000	.6000	1.4602	.25135	.17587	-.05358	.05668
5.0000	.8000	1.4071	.24310	.14655	-.06184	.02736
5.0000	1.0000	1.3496	.24015	.11919	-.06479	0
6.0000	0	1.7908	.43598	.37589	0	.19448
6.0000	.2000	1.7096	.40166	.33285	-.03432	.15145
6.0000	.4000	1.6350	.37327	.29137	-.06271	.10997
6.0000	.6000	1.5642	.35133	.25196	-.08465	.07055
6.0000	.8000	1.4943	.33635	.21513	-.09963	.03372
6.0000	1.0000	1.4226	.32886	.18140	-.10711	0
7.0000	0	1.9669	.57114	.47710	0	.23737
7.0000	.2000	1.8547	.52301	.42370	-.04813	.18397
7.0000	.4000	1.7536	.48240	.37244	-.08874	.13271
7.0000	.6000	1.6606	.45013	.32414	-.12101	.08441
7.0000	.8000	1.5727	.42702	.27963	-.14412	.03990
7.0000	1.0000	1.4868	.41389	.23974	-.15724	0
8.0000	0	2.1411	.70784	.57422	0	.28053
8.0000	.2000	1.9948	.64449	.50998	-.06335	.21629
8.0000	.4000	1.8647	.59023	.44858	-.11760	.15489
8.0000	.6000	1.7479	.54630	.39125	-.16154	.09755
8.0000	.8000	1.6414	.51391	.33921	-.19393	.04551
8.0000	1.0000	1.5423	.49430	.29369	-.21354	0
9.0000	0	2.3092	.84345	.66531	0	.32205
9.0000	.2000	2.1270	.76399	.59011	-.07946	.24685
9.0000	.4000	1.9663	.69512	.51855	-.14833	.17530
9.0000	.6000	1.8247	.63858	.45239	-.20487	.10913
9.0000	.8000	1.7000	.59613	.39337	-.24732	.05012
9.0000	1.0000	1.5898	.56951	.34325	-.27394	0
10.0000	0	2.4666	.97529	.74844	0	.35962
10.0000	.2000	2.2479	.87942	.66258	-.09587	.27376
10.0000	.4000	2.0561	.79549	.58129	-.17980	.19247
10.0000	.6000	1.8901	.72588	.50696	-.24941	.11814
10.0000	.8000	1.7486	.67302	.44200	-.30227	.05319
10.0000	1.0000	1.6304	.63929	.38882	-.33600	0

Component A: $LiClO_4$

Component B: $NaClO_4$

Reference: R. M. Rush and J. S. Johnson, J. Phys. Chem., 72, 767 (1968).

Concentration range: I = 0.8 to 5.8 Temperature: 25°

$b_{AB}^{(0,1)}$	0.0158
$b_{AB}^{(0,2)}$	-0.0202
$b_{AB}^{(0,3)}$	0.00105
$b_{AB}^{(1,2)}$	0.00420
$b_{AB}^{(1,3)}$	-0.00097
std. dev. in Φ	0.0004

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$a^{(1)}$	0.3434	0.00172
$a^{(2)}$	-0.01570	0.01276
$a^{(3)}$	0.00678	-0.000890
$a^{(4)}$	-0.000666	0
std. dev. in Φ	0.0007	0.0005
S	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference. Data for $LiClO_4$ good only to I = 4.5.

LICL04(A)-NACL04(B) MIXTURES - B(01) B(02) B(03) B(12) B(13)

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	1.0741	-.05759	-.12750	0	.07125
1.0000	.2000	1.0420	-.07145	-.14227	-.01387	.05648
1.0000	.4000	1.0098	-.08524	-.15677	-.02765	.04198
1.0000	.6000	.9776	-.09895	-.17101	-.04136	.02774
1.0000	.8000	.9456	-.11260	-.18500	-.05501	.01375
1.0000	1.0000	.9140	-.12618	-.19875	-.06860	0
2.0000	0	1.2428	.06025	-.07965	0	.13468
2.0000	.2000	1.1780	.03215	-.10845	-.02810	.10587
2.0000	.4000	1.1141	.00444	-.13627	-.05581	.07806
2.0000	.6000	1.0517	-.02295	-.16315	-.08320	.05118
2.0000	.8000	.9911	-.05007	-.18915	-.11032	.02518
2.0000	1.0000	.9327	-.07697	-.21433	-.13721	0
3.0000	0	1.4212	.19497	-.01698	0	.19511
3.0000	.2000	1.3211	.15140	-.05974	-.04357	.15234
3.0000	.4000	1.2244	.10883	-.10045	-.08614	.11163
3.0000	.6000	1.1316	.06706	-.13929	-.12791	.07280
3.0000	.8000	1.0434	.02591	-.17644	-.16906	.03564
3.0000	1.0000	.9602	-.01479	-.21208	-.20976	0
4.0000	0	1.6081	.33984	.05264	0	.25389
4.0000	.2000	1.4699	.27938	-.00396	-.06046	.19728
4.0000	.4000	1.3389	.22091	-.05722	-.11893	.14402
4.0000	.6000	1.2155	.16400	-.10757	-.17584	.09367
4.0000	.8000	1.0998	.10823	-.15543	-.23161	.04581
4.0000	1.0000	.9923	.05315	-.20124	-.28669	0
5.0000	0	1.7959	.48910	.12321	0	.30891
5.0000	.2000	1.6177	.41083	.05360	-.07827	.23930
5.0000	.4000	1.4524	.33604	-.01125	-.15306	.17445
5.0000	.6000	1.2992	.26389	-.07219	-.22520	.11351
5.0000	.8000	1.1574	.19354	-.13006	-.29555	.05564
5.0000	1.0000	1.0262	.12415	-.18570	-.36494	0

Component A: NaCl

Component B: KCl

Reference: R. A. Robinson, J. Phys. Chem., 65, 662 (1961); R. M. Rush and R. A. Robinson, J. Tenn. Acad. Sci., 43, 22 (1968).

Concentration range: I = 0.5 to 5.4 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.0253
$\underline{b}_{AB}^{(0,2)}$	-0.00299
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0008

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03684	-0.06408
$\underline{a}^{(2)}$	0.02108	0.05244
$\underline{a}^{(3)}$	-0.001304	-0.01124
$\underline{a}^{(4)}$	0	0.000918
std. dev. in Φ	0.0006	0.0010
$\underline{S}$	-1.17082	-1.17082

Remarks: See following reference. Reference electrolyte was NaCl. Parameters published in second reference. Data for KCl good only to I = 4.8.

NACL(A)-KCL(B) MIXTURES - ROBINSON(1961) - B(01) B(02)

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B
0.5000	0.0	0.9220	-0.16481	-0.17783
0.5000	0.2000	0.9166	-0.16729	-0.17918
0.5000	0.4000	0.9117	-0.16977	-0.18053
0.5000	0.6000	0.9073	-0.17224	-0.18186
0.5000	0.8000	0.9034	-0.17470	-0.18319
0.5000	1.0000	0.9001	-0.17715	-0.18452
1.0000	0.0	0.9355	-0.18090	-0.20590
1.0000	0.2000	0.9254	-0.18553	-0.20820
1.0000	0.4000	0.9164	-0.19013	-0.21048
1.0000	0.6000	0.9086	-0.19471	-0.21273
1.0000	0.8000	0.9018	-0.19926	-0.21495
1.0000	1.0000	0.8962	-0.20378	-0.21715
2.0000	0.0	0.9828	-0.17394	-0.22139
2.0000	0.2000	0.9637	-0.18274	-0.22527
2.0000	0.4000	0.9471	-0.19143	-0.22905
2.0000	0.6000	0.9330	-0.20002	-0.23273
2.0000	0.8000	0.9213	-0.20850	-0.23630
2.0000	1.0000	0.9122	-0.21688	-0.23977
3.0000	0.0	1.0447	-0.14517	-0.21505
3.0000	0.2000	1.0150	-0.15883	-0.22095
3.0000	0.4000	0.9895	-0.17226	-0.22662
3.0000	0.6000	0.9680	-0.18545	-0.23205
3.0000	0.8000	0.9507	-0.19841	-0.23725
3.0000	1.0000	0.9375	-0.21113	-0.24222
4.0000	0.0	1.1158	-0.10455	-0.19816
4.0000	0.2000	1.0736	-0.12396	-0.20671
4.0000	0.4000	1.0374	-0.14296	-0.21484
4.0000	0.6000	1.0071	-0.16154	-0.22256
4.0000	0.8000	0.9828	-0.17971	-0.22986
4.0000	1.0000	0.9644	-0.19746	-0.23675
5.0000	0.0	1.1921	-0.05667	-0.17545
5.0000	0.2000	1.1371	-0.08197	-0.18652
5.0000	0.4000	1.0902	-0.10662	-0.19694
5.0000	0.6000	1.0513	-0.13062	-0.20671
5.0000	0.8000	1.0204	-0.15398	-0.21584
5.0000	1.0000	0.9977	-0.17668	-0.22431

Component A: NaCl

Component B: KCl

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 37, 2773 (1963).

Concentration range: I = 2.0 to 4.5 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.0371
$\underline{b}_{AB}^{(0,2)}$	-0.00028
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0012

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03684	-0.06408
$\underline{a}^{(2)}$	0.02108	0.05244
$\underline{a}^{(3)}$	-0.001304	-0.01124
$\underline{a}^{(4)}$	0	0.000918
std. dev. in Φ	0.0006	0.0010
$\underline{S}$	-1.17082	-1.17082

Remarks: See preceding reference. Reference electrolyte was NaCl.

NACL(A)-KCL(B) MIXTURES, KIRGINTSEV(1963), 01 02

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B
1.0000	0.0	0.9355	-0.18090	-0.20818
1.0000	0.2000	0.9247	-0.18594	-0.20997
1.0000	0.4000	0.9153	-0.19097	-0.21177
1.0000	0.6000	0.9075	-0.19601	-0.21357
1.0000	0.8000	0.9011	-0.20103	-0.21536
1.0000	1.0000	0.8962	-0.20606	-0.21715
2.0000	0.0	0.9828	-0.17394	-0.22535
2.0000	0.2000	0.9627	-0.18334	-0.22825
2.0000	0.4000	0.9455	-0.19273	-0.23115
2.0000	0.6000	0.9314	-0.20211	-0.23403
2.0000	0.8000	0.9203	-0.21149	-0.23690
2.0000	1.0000	0.9122	-0.22085	-0.23977
3.0000	0.0	1.0447	-0.14517	-0.22012
3.0000	0.2000	1.0142	-0.15942	-0.22458
3.0000	0.4000	0.9882	-0.17365	-0.22902
3.0000	0.6000	0.9667	-0.18785	-0.23344
3.0000	0.8000	0.9498	-0.20204	-0.23784
3.0000	1.0000	0.9375	-0.21620	-0.24222
4.0000	0.0	1.1158	-0.10455	-0.20373
4.0000	0.2000	1.0733	-0.12432	-0.21042
4.0000	0.4000	1.0369	-0.14406	-0.21706
4.0000	0.6000	1.0066	-0.16376	-0.22366
4.0000	0.8000	0.9825	-0.18342	-0.23023
4.0000	1.0000	0.9644	-0.20304	-0.23675
5.0000	0.0	1.1921	-0.05667	-0.18095
5.0000	0.2000	1.1378	-0.08190	-0.18975
5.0000	0.4000	1.0912	-0.10706	-0.19848
5.0000	0.6000	1.0523	-0.13216	-0.20715
5.0000	0.8000	1.0211	-0.15721	-0.21576
5.0000	1.0000	0.9977	-0.18219	-0.22431

Component A: NaCl

Component B: CsCl

Reference: R. A. Robinson, J. Amer. Chem. Soc., 74, 6035 (1952).

Concentration range: I = 0.5 to 6.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.0226
$\underline{b}_{AB}^{(0,2)}$	-0.0324
$\underline{b}_{AB}^{(0,3)}$	0.00350
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0021

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03684	-0.1724
$\underline{a}^{(2)}$	0.02108	0.0834
$\underline{a}^{(3)}$	-0.001304	-0.01324
$\underline{a}^{(4)}$	0	0.000722
std. dev. in Φ	0.0006	0.0059
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl.

NACL(A)-CSCL(B) - RABINSAN (1952) - 01 02 03

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/GO) A	LOG(G/GO) B
.5000	0	.9220	-.16481	-.18925	0	.01635
.5000	.2000	.9115	-.16953	-.19265	-.00472	.01295
.5000	.4000	.9017	-.17419	-.19598	-.00938	.00961
.5000	.6000	.8926	-.17878	-.19925	-.01397	.00634
.5000	.8000	.8843	-.18331	-.20246	-.01849	.00314
.5000	1.0000	.8768	-.18777	-.20559	-.02295	0
1.0000	0	.9355	-.18090	-.22857	0	.02616
1.0000	.2000	.9156	-.18989	-.23429	-.00898	.02045
1.0000	.4000	.8977	-.19863	-.23976	-.01773	.01498
1.0000	.6000	.8819	-.20713	-.24499	-.02623	.00974
1.0000	.8000	.8682	-.21540	-.24999	-.03449	.00475
1.0000	1.0000	.8565	-.22342	-.25474	-.04251	0
2.0000	0	.9828	-.17394	-.26589	0	.03310
2.0000	.2000	.9458	-.19091	-.27412	-.01697	.02488
2.0000	.4000	.9146	-.20708	-.28154	-.03314	.01746
2.0000	.6000	.8893	-.22244	-.28816	-.04850	.01084
2.0000	.8000	.8698	-.23701	-.29398	-.06307	.00502
2.0000	1.0000	.8563	-.25077	-.29900	-.07683	0
3.0000	0	1.0447	-.14517	-.28029	0	.03225
3.0000	.2000	.9904	-.17032	-.28961	-.02515	.02292
3.0000	.4000	.9468	-.19403	-.29750	-.04885	.01503
3.0000	.6000	.9137	-.21630	-.30395	-.07112	.00858
3.0000	.8000	.8913	-.23713	-.30896	-.09195	.00357
3.0000	1.0000	.8794	-.25652	-.31253	-.11135	0
4.0000	0	1.1158	-.10455	-.28300	0	.03125
4.0000	.2000	1.0431	-.13850	-.29307	-.03396	.02118
4.0000	.4000	.9858	-.17055	-.30123	-.06600	.01302
4.0000	.6000	.9440	-.20068	-.30748	-.09614	.00677
4.0000	.8000	.9175	-.22891	-.31182	-.12436	.00243
4.0000	1.0000	.9064	-.25523	-.31425	-.15068	0
5.0000	0	1.1921	-.05667	-.27903	0	.03402
5.0000	.2000	1.1003	-.09976	-.28978	-.04308	.02327
5.0000	.4000	1.0280	-.14087	-.29856	-.08420	.01450
5.0000	.6000	.9751	-.18001	-.30536	-.12334	.00769
5.0000	.8000	.9416	-.21718	-.31019	-.16050	.00286
5.0000	1.0000	.9276	-.25237	-.31305	-.19570	0
6.0000	0	1.2696	-.00484	-.27109	0	.04069
6.0000	.2000	1.1604	-.05630	-.28199	-.05146	.02979
6.0000	.4000	1.0731	-.10638	-.29151	-.10155	.02027
6.0000	.6000	1.0077	-.15508	-.29965	-.15025	.01213
6.0000	.8000	.9641	-.20240	-.30640	-.19757	.00537
6.0000	1.0000	.9424	-.24834	-.31178	-.24350	0

Component A: $MgCl_2$

Component B: NaCl

Reference: Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., 72 4048 (1968).

Concentration range: I = 1.1 to 5.9 Temperature: 25°

$b_{AB}^{(0,1)}$	0.0654
$b_{AB}^{(0,2)}$	-0.0176
$b_{AB}^{(0,3)}$	0.00191
$b_{AB}^{(1,2)}$	0
$b_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0014

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.60067	1.45397
$a^{(1)}$	0.06633	0.04472
$a^{(2)}$	0.009003	0.018616
$a^{(3)}$	-0.0002545	-0.0010724
$a^{(4)}$	0	0
std. dev. in Φ	0.0039	0.0004
S	-1.17202	-1.17202

Remarks: See following reference. Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference.

MGCL2(A)-NACL(B) MIXTURES - WU, DI 02 03

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
.5000	0	.8653	-.30740	-.15470	0	.01158
.5000	.2000	.8878	-.30686	-.15709	.00054	.00919
.5000	.4000	.9022	-.30625	-.15944	.00116	.00684
.5000	.6000	.9116	-.30556	-.16175	.00184	.00452
.5000	.8000	.9176	-.30481	-.16403	.00260	.00224
.5000	1.0000	.9213	-.30398	-.16628	.00342	0
1.0000	0	.9010	-.32811	-.16326	0	.01899
1.0000	.2000	.9191	-.32627	-.16732	.00183	.01493
1.0000	.4000	.9292	-.32418	-.17124	.00393	.01100
1.0000	.6000	.9343	-.32182	-.17504	.00628	.00720
1.0000	.8000	.9360	-.31921	-.17871	.00890	.00354
1.0000	1.0000	.9354	-.31633	-.18224	.01178	0
2.0000	0	.9976	-.30361	-.14632	0	.02860
2.0000	.2000	1.0030	-.29927	-.15291	.00434	.02201
2.0000	.4000	1.0025	-.29406	-.15906	.00956	.01586
2.0000	.6000	.9983	-.28798	-.16478	.01563	.01014
2.0000	.8000	.9917	-.28104	-.17006	.02257	.00485
2.0000	1.0000	.9834	-.27323	-.17492	.03038	0
3.0000	0	1.1108	-.24575	-.11244	0	.03368
3.0000	.2000	1.1009	-.23897	-.12073	.00679	.02539
3.0000	.4000	1.0887	-.23063	-.12824	.01512	.01788
3.0000	.6000	1.0750	-.22074	-.13497	.02501	.01115
3.0000	.8000	1.0604	-.20931	-.14094	.03645	.00519
3.0000	1.0000	1.0451	-.19632	-.14612	.04943	0
4.0000	0	1.2370	-.16975	-.06931	0	.03636
4.0000	.2000	1.2103	-.16024	-.07862	.00951	.02704
4.0000	.4000	1.1854	-.14868	-.08692	.02107	.01875
4.0000	.6000	1.1615	-.13508	-.09419	.03467	.01147
4.0000	.8000	1.1384	-.11943	-.10044	.05032	.00523
4.0000	1.0000	1.1158	-.10174	-.10566	.06801	0
5.0000	0	1.3743	-.08083	-.01926	0	.03859
5.0000	.2000	1.3305	-.06790	-.02906	.01293	.02878
5.0000	.4000	1.2919	-.05289	-.03782	.02794	.02002
5.0000	.6000	1.2566	-.03578	-.04554	.04505	.01230
5.0000	.8000	1.2235	-.01659	-.05221	.06424	.00563
5.0000	1.0000	1.1919	.00469	-.05784	.08552	0
6.0000	0	1.5213	.01824	.03671	0	.04229
6.0000	.2000	1.4608	.03571	.02684	.01747	.03242
6.0000	.4000	1.4077	.05459	.01768	.03635	.02325
6.0000	.6000	1.3591	.07488	.00922	.05664	.01480
6.0000	.8000	1.3137	.09659	.00147	.07834	.00705
6.0000	1.0000	1.2704	.11970	-.00558	.10145	0

Component A: $MgCl_2$

Component B: NaCl

Reference: R. F. Platford, J. Phys. Chem., 72, 4053 (1968).

Concentration range: I = 1.2 to 6.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0464
$\underline{b}_{AB}^{(0,2)}$	-0.00296
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0.000644
std. dev. in ϕ	0.0020

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.60067	1.45397
$\underline{a}^{(1)}$	0.06633	0.04472
$\underline{a}^{(2)}$	0.009003	0.018616
$\underline{a}^{(3)}$	-0.0002545	-0.0010724
$\underline{a}^{(4)}$	0	0
std. dev. in ϕ	0.0039	0.0004
$\underline{S}$	-1.17202	-1.17202

Remarks: See preceding reference. Reference electrolyte was NaCl. Three-component parameters given in reference.

MGCL2(A)-NACL(B) MIXTURES - PLATFORD (1.0-6.0), 01 02 13

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
0.5000	0.0	0.8653	-0.30740	-0.15638	0.0	0.00989
0.5000	0.2000	0.8870	-0.30742	-0.15838	-0.00001	0.00790
0.5000	0.4000	0.9011	-0.30742	-0.16036	-0.00001	0.00591
0.5000	0.6000	0.9107	-0.30741	-0.16234	-0.00001	0.00393
0.5000	0.8000	0.9171	-0.30740	-0.16431	0.00001	0.00196
0.5000	1.0000	0.9213	-0.30737	-0.16628	0.00004	0.0
1.0000	0.0	0.9010	-0.32811	-0.16590	0.0	0.01635
1.0000	0.2000	0.9183	-0.32689	-0.16923	0.00121	0.01301
1.0000	0.4000	0.9281	-0.32567	-0.17254	0.00244	0.00970
1.0000	0.6000	0.9333	-0.32441	-0.17582	0.00370	0.00643
1.0000	0.8000	0.9354	-0.32312	-0.17905	0.00498	0.00319
1.0000	1.0000	0.9354	-0.32179	-0.18224	0.00631	0.0
2.0000	0.0	0.9976	-0.30361	-0.14898	0.0	0.02594
2.0000	0.2000	1.0040	-0.29888	-0.15452	0.00473	0.02040
2.0000	0.4000	1.0035	-0.29423	-0.15991	0.00939	0.01500
2.0000	0.6000	0.9989	-0.28958	-0.16514	0.01403	0.00978
2.0000	0.8000	0.9919	-0.28488	-0.17015	0.01873	0.00477
2.0000	1.0000	0.9834	-0.28004	-0.17492	0.02357	0.0
3.0000	0.0	1.1108	-0.24575	-0.11305	0.0	0.03307
3.0000	0.2000	1.1053	-0.23659	-0.12061	0.00916	0.02551
3.0000	0.4000	1.0932	-0.22794	-0.12782	0.01782	0.01830
3.0000	0.6000	1.0779	-0.21954	-0.13455	0.02621	0.01157
3.0000	0.8000	1.0615	-0.21117	-0.14070	0.03458	0.00543
3.0000	1.0000	1.0451	-0.20257	-0.14612	0.04318	0.0
4.0000	0.0	1.2370	-0.16975	-0.06635	0.0	0.03932
4.0000	0.2000	1.2183	-0.15556	-0.07618	0.01419	0.02948
4.0000	0.4000	1.1928	-0.14284	-0.08531	0.02691	0.02035
4.0000	0.6000	1.1656	-0.13101	-0.09346	0.03874	0.01220
4.0000	0.8000	1.1393	-0.11951	-0.10034	0.05024	0.00532
4.0000	1.0000	1.1158	-0.10776	-0.10566	0.06199	0.0
5.0000	0.0	1.3743	-0.08083	-0.01176	0.0	0.04608
5.0000	0.2000	1.3410	-0.06125	-0.02450	0.01958	0.03334
5.0000	0.4000	1.2999	-0.04486	-0.03604	0.03597	0.02180
5.0000	0.6000	1.2588	-0.03054	-0.04582	0.05029	0.01203
5.0000	0.8000	1.2219	-0.01717	-0.05327	0.06366	0.00457
5.0000	1.0000	1.1919	-0.00364	-0.05784	0.07719	0.0
6.0000	0.0	1.5213	0.01824	0.04915	0.0	0.05473
6.0000	0.2000	1.4717	0.04335	0.03249	0.02511	0.03806
6.0000	0.4000	1.4121	0.06258	0.01771	0.04434	0.02329
6.0000	0.6000	1.3547	0.07786	0.00580	0.05961	0.01138
6.0000	0.8000	1.3061	0.09111	-0.00228	0.07287	0.00329
6.0000	1.0000	1.2704	0.10429	-0.00558	0.08605	0.0

Component A: $CaCl_2$

Component B: NaCl

Reference: R. A. Robinson and V. E. Bower, J. Res. Nat. Bur. Stand., 70A, 313 (1966).

Concentration range: I = 0.7 to 6.3 Temperature: 25°

$b_{AB}^{(0,1)}$	0.0703
$b_{AB}^{(0,2)}$	-0.0225
$b_{AB}^{(0,3)}$	0.00235
$b_{AB}^{(1,2)}$	0.00405
$b_{AB}^{(1,3)}$	-0.00050
std. dev. in Φ	0.0011

Two-component parameters:

	A	B
a	1.5	1.5
$a^{(1)}$	0.05848	0.03684
$a^{(2)}$	0.005532	0.02108
$a^{(3)}$	-0.000068	-0.001304
$a^{(4)}$	0	0
std. dev. in Φ	0.0054	0.0006
S	-1.17082	-1.17082

Remarks: See following reference. Reference electrolyte was NaCl. Equation for $CaCl_2$ derived from data supplied by R. A. Robinson (see KCl-$CaCl_2$ reference).

CACL2(A)-NACL(B) MIXTURES - ROBINSON AND BOWER, 01 02 03 12 13

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
.7500	0	.8628	-.34297	-.16373	0	.01211
.7500	.2000	.8899	-.33988	-.16646	.00309	.00938
.7500	.4000	.9068	-.33670	-.16903	.00628	.00680
.7500	.6000	.9173	-.33343	-.17146	.00955	.00438
.7500	.8000	.9237	-.33007	-.17372	.01290	.00211
.7500	1.0000	.9274	-.32663	-.17584	.01634	0
1.0000	0	.8784	-.35243	-.16593	0	.01498
1.0000	.2000	.9044	-.34832	-.16946	.00410	.01145
1.0000	.4000	.9198	-.34407	-.17272	.00836	.00819
1.0000	.6000	.9287	-.33967	-.17571	.01276	.00520
1.0000	.8000	.9335	-.33513	-.17844	.01730	.00247
1.0000	1.0000	.9355	-.33045	-.18090	.02197	0
1.5000	0	.9153	-.35484	-.16215	0	.01918
1.5000	.2000	.9381	-.34873	-.16711	.00611	.01422
1.5000	.4000	.9501	-.34231	-.17150	.01253	.00983
1.5000	.6000	.9556	-.33559	-.17532	.01925	.00601
1.5000	.8000	.9574	-.32861	-.17860	.02623	.00273
1.5000	1.0000	.9569	-.32138	-.18133	.03346	0
2.0000	0	.9566	-.34508	-.15234	0	.02160
2.0000	.2000	.9756	-.33695	-.15852	.00813	.01542
2.0000	.4000	.9839	-.32831	-.16375	.01676	.01019
2.0000	.6000	.9863	-.31923	-.16804	.02585	.00590
2.0000	.8000	.9854	-.30974	-.17143	.03533	.00251
2.0000	1.0000	.9828	-.29992	-.17394	.04516	0
3.0000	0	1.0478	-.30579	-.12289	0	.02229
3.0000	.2000	1.0581	-.29346	-.13092	.01233	.01425
3.0000	.4000	1.0591	-.28023	-.13708	.02556	.00810
3.0000	.6000	1.0555	-.26628	-.14144	.03952	.00373
3.0000	.8000	1.0502	-.25180	-.14411	.05400	.00107
3.0000	1.0000	1.0447	-.23698	-.14517	.06882	0
4.0000	0	1.1485	-.25016	-.08510	0	.01945
4.0000	.2000	1.1497	-.23319	-.09426	.01697	.01029
4.0000	.4000	1.1431	-.21505	-.10056	.03511	.00399
4.0000	.6000	1.1337	-.19616	-.10422	.05400	.00032
4.0000	.8000	1.1240	-.17699	-.10548	.07317	-.00093
4.0000	1.0000	1.1158	-.15797	-.10455	.09219	0
5.0000	0	1.2582	-.18312	-.04118	0	.01550
5.0000	.2000	1.2501	-.16083	-.05080	.02229	.00588
5.0000	.4000	1.2357	-.13736	-.05672	.04576	-.00005
5.0000	.6000	1.2197	-.11358	-.05939	.06954	-.00272
5.0000	.8000	1.2046	-.09036	-.05923	.09276	-.00255
5.0000	1.0000	1.1921	-.06856	-.05667	.11455	0
6.0000	0	1.3762	-.10693	.00802	0	.01285
6.0000	.2000	1.3594	-.07837	-.00148	.02856	.00335
6.0000	.4000	1.3368	-.04908	-.00677	.05785	-.00193
6.0000	.6000	1.3128	-.02055	-.00859	.08638	-.00375
6.0000	.8000	1.2899	.00572	-.00769	.11265	-.00286
6.0000	1.0000	1.2696	.02822	-.00484	.13515	0

Component A: NaCl

Component B: $CaCl_2$

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 39, 744 (1965).

Concentration range: I = 3.6 to 8.6 Temperature: 25°

$b_{AB}^{(0,1)}$	0.0401
$b_{AB}^{(0,2)}$	-0.00265
$b_{AB}^{(0,3)}$	0
$b_{AB}^{(1,2)}$	-0.00328
$b_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0102

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$a^{(1)}$	0.03684	0.05848
$a^{(2)}$	0.02108	0.005532
$a^{(3)}$	-0.001304	-0.000068
$a^{(4)}$	0	0
std. dev. in Φ	0.0006	0.0054
S	-1.17082	-1.17082

Remarks: See preceding reference. Reference electrolyte was NaCl. Equation for $CaCl_2$ derived from data supplied by R. A. Robinson (see KCl-$CaCl_2$ reference). Data for NaCl good only to I = 6.

NACL(A)-CACL2(B) MIXTURES, KIRGNTSEV AND LUKYANOV(1965), 01 02 12

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
3,0000	0	1,0447	-,14517	-,24702	0	,05877
3,0000	,2000	1,0521	-,14358	-,25652	,00159	,04927
3,0000	,4000	1,0591	-,14102	-,26715	,00416	,03864
3,0000	,6000	1,0636	-,13747	-,27891	,00770	,02689
3,0000	,8000	1,0620	-,13295	-,29179	,01222	,01401
3,0000	1,0000	1,0478	-,12746	-,30579	,01772	0
4,0000	0	1,1158	-,10455	-,16496	0	,08520
4,0000	,2000	1,1272	-,10444	-,17800	,00011	,07216
4,0000	,4000	1,1402	-,10259	-,19304	,00196	,05712
4,0000	,6000	1,1519	-,09901	-,21008	,00554	,04008
4,0000	,8000	1,1576	-,09369	-,22912	,01085	,02104
4,0000	1,0000	1,1485	-,08664	-,25016	,01791	0
5,0000	0	1,1921	-,05667	-,07345	0	,10967
5,0000	,2000	1,2070	-,05851	-,08913	-,00184	,09398
5,0000	,4000	1,2263	-,05764	-,10794	-,00097	,07518
5,0000	,6000	1,2463	-,05406	-,12987	,00262	,05324
5,0000	,8000	1,2606	-,04776	-,15493	,00892	,02818
5,0000	1,0000	1,2582	-,03875	-,18312	,01793	0
6,0000	0	1,2696	-,00484	,02203	0	,12896
6,0000	,2000	1,2880	-,00877	,00524	-,00394	,11217
6,0000	,4000	1,3145	-,00880	-,01605	-,00397	,09088
6,0000	,6000	1,3443	-,00492	-,04184	-,00009	,06509
6,0000	,8000	1,3695	,00286	-,07213	,00769	,03479
6,0000	1,0000	1,3762	,01455	-,10693	,01938	0

Component A: $BaCl_2$

Component B: NaCl

Reference: R. A. Robinson and V. E. Bower, J. Res. Nat. Bur. Stand., 69A, 19 (1965).

Concentration range: I = 0.6 to 4.8 Temperature: 25°

$b_{AB}^{(0,1)}$	0.03674
$b_{AB}^{(0,2)}$	-0.02512
$b_{AB}^{(0,3)}$	0.00304
$b_{AB}^{(1,2)}$	0.0095
$b_{AB}^{(1,3)}$	-0.00257
std. dev. in Φ	0.0013

Two-component parameters:

	A	B
α	1.5	1.5
$a^{(1)}$	0.03166	0.03684
$a^{(2)}$	0	0.02108
$a^{(3)}$	0.000912	-0.001304
$a^{(4)}$	-0.0001006	0
std. dev. in Φ	0.0007	0.0006
S	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl. Equation for $BaCl_2$ obtained from data in $BaCl_2$-KCl reference.

BACL2(A)-NACL(B) MIXTURES, ROBINSON AND BOWER (1965), 01 02 03 12 13

			LOG GAMMA	
I	Y(B)	PHI	A	B
1.0000	0.0	0.8469	-0.37881	-0.17983
1.0000	0.2000	0.8790	-0.37482	-0.18084
1.0000	0.4000	0.9003	-0.37082	-0.18143
1.0000	0.6000	0.9154	-0.36683	-0.18162
1.0000	0.8000	0.9266	-0.36290	-0.18144
1.0000	1.0000	0.9355	-0.35907	-0.18090
2.0000	0.0	0.8871	-0.40242	-0.18156
2.0000	0.2000	0.9200	-0.39405	-0.18262
2.0000	0.4000	0.9419	-0.38533	-0.18225
2.0000	0.6000	0.9580	-0.37655	-0.18058
2.0000	0.8000	0.9710	-0.36799	-0.17777
2.0000	1.0000	0.9828	-0.35994	-0.17394
3.0000	0.0	0.9358	-0.39721	-0.16895
3.0000	0.2000	0.9689	-0.38438	-0.16873
3.0000	0.4000	0.9928	-0.37011	-0.16577
3.0000	0.6000	1.0120	-0.35537	-0.16053
3.0000	0.8000	1.0288	-0.34112	-0.15351
3.0000	1.0000	1.0447	-0.32834	-0.14517
4.0000	0.0	0.9897	-0.37866	-0.15014
4.0000	0.2000	1.0227	-0.36137	-0.14683
4.0000	0.4000	1.0510	-0.34038	-0.13947
4.0000	0.6000	1.0756	-0.31796	-0.12921
4.0000	0.8000	1.0971	-0.29641	-0.11719
4.0000	1.0000	1.1158	-0.27800	-0.10455
5.0000	0.0	1.0454	-0.35289	-0.12851
5.0000	0.2000	1.0790	-0.33103	-0.11967
5.0000	0.4000	1.1154	-0.30159	-0.10584
5.0000	0.6000	1.1483	-0.26900	-0.08924
5.0000	0.8000	1.1746	-0.23775	-0.07211
5.0000	1.0000	1.1921	-0.21228	-0.05667

Component A: NaCl

Component B: $LaCl_3$

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 39, 744 (1965).

Concentration range: I = 3.4 to 10.6 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0339
$\underline{b}_{AB}^{(0,2)}$	-0.0119
$\underline{b}_{AB}^{(0,3)}$	0.00096
$\underline{b}_{AB}^{(1,2)}$	-0.00383
$\underline{b}_{AB}^{(1,3)}$	0.000365
std. dev. in Φ	0.0012

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03684	0.04373
$\underline{a}^{(2)}$	0.02108	-0.00295
$\underline{a}^{(3)}$	-0.001304	0.000651
$\underline{a}^{(4)}$	0	-0.0000285
std. dev. in Φ	0.0006	0.0082
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl. Data for NaCl good only to I = 6.

NACL(A)-LACL3(B) MIXTURES - KIRGINTSEV (1965-B), 01 02 03 12 13

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
3.0000	0	1.0447	-.14517	-.45342	0	.12233
3.0000	.2000	1.0354	-.15104	-.47709	-.00587	.09865
3.0000	.4000	1.0240	-.15565	-.50137	-.01048	.07438
3.0000	.6000	1.0072	-.15894	-.52604	-.01376	.04971
3.0000	.8000	.9777	-.16083	-.55090	-.01566	.02485
3.0000	1.0000	.9168	-.16127	-.57575	-.01610	0
4.0000	0	1.1158	-.10455	-.37003	0	.18030
4.0000	.2000	1.1046	-.11538	-.40410	-.01083	.14622
4.0000	.4000	1.0927	-.12432	-.43965	-.01978	.11067
4.0000	.6000	1.0765	-.13121	-.47620	-.02667	.07413
4.0000	.8000	1.0486	-.13589	-.51325	-.03134	.03707
4.0000	1.0000	.9894	-.13818	-.55032	-.03364	0
5.0000	0	1.1921	-.05667	-.27459	0	.23922
5.0000	.2000	1.1790	-.07282	-.31843	-.01615	.19538
5.0000	.4000	1.1665	-.08655	-.36522	-.02987	.14859
5.0000	.6000	1.1510	-.09753	-.41402	-.04086	.09980
5.0000	.8000	1.1247	-.10545	-.46386	-.04878	.04995
5.0000	1.0000	1.0676	-.11000	-.51381	-.05333	0
6.0000	0	1.2696	-.00484	-.17319	0	.29519
6.0000	.2000	1.2556	-.02600	-.22516	-.02116	.24322
6.0000	.4000	1.2434	-.04443	-.28231	-.03959	.18607
6.0000	.6000	1.2293	-.05958	-.34299	-.05475	.12539
6.0000	.8000	1.2057	-.07092	-.40556	-.06608	.06282
6.0000	1.0000	1.1524	-.07788	-.46838	-.07305	0

Component A: NaCl

Component B: $NaNO_3$

Reference: A. N. Kirgintsev and A. V. Luk'yanov, Zh. Fiz. Khim., 38, 1603 (1964).

Concentration range: I = 2.5 to 5.8 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0
$\underline{b}_{AB}^{(0,2)}$	0
$\underline{b}_{AB}^{(0,3)}$	-0.001091
$\underline{b}_{AB}^{(1,2)}$	0.00909
$\underline{b}_{AB}^{(1,3)}$	-0.00207
std. dev. in ϕ	0.0015

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03684	-0.16736
$\underline{a}^{(2)}$	0.02108	0.06414
$\underline{a}^{(3)}$	-0.001304	-0.01318
$\underline{a}^{(4)}$	0	0.000986
std. dev. in ϕ	0.0006	0.0021
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was NaCl.

NACL(A)-NANO3(B) - KIRGINTSEV AND LUKYANOV (1964) - 03 12 13

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
1.0000	0	.9355	-.18090	-.22062	0	.03811
1.0000	.2000	.9186	-.18820	-.22868	-.00729	.03005
1.0000	.4000	.9012	-.19566	-.23651	-.01475	.02222
1.0000	.6000	.8836	-.20330	-.24412	-.02239	.01461
1.0000	.8000	.8663	-.21113	-.25152	-.03023	.00721
1.0000	1.0000	.8495	-.21918	-.25873	-.03827	0
2.0000	0	.9828	-.17394	-.24783	0	.07060
2.0000	.2000	.9515	-.18731	-.26358	-.01337	.05485
2.0000	.4000	.9192	-.20107	-.27841	-.02713	.04002
2.0000	.6000	.8867	-.21533	-.29241	-.04139	.02602
2.0000	.8000	.8550	-.23020	-.30571	-.05626	.01271
2.0000	1.0000	.8251	-.24581	-.31843	-.07187	0
3.0000	0	1.0447	-.14517	-.25229	0	.10386
3.0000	.2000	.9970	-.16555	-.27646	-.02038	.07970
3.0000	.4000	.9486	-.18616	-.29853	-.04099	.05762
3.0000	.6000	.9008	-.20740	-.31892	-.06222	.03723
3.0000	.8000	.8548	-.22964	-.33799	-.08447	.01816
3.0000	1.0000	.8118	-.25329	-.35615	-.10812	0
4.0000	0	1.1158	-.10455	-.24728	0	.13913
4.0000	.2000	1.0473	-.13396	-.28062	-.02941	.10580
4.0000	.4000	.9807	-.16267	-.31028	-.05812	.07614
4.0000	.6000	.9165	-.19160	-.33719	-.08705	.04923
4.0000	.8000	.8554	-.22166	-.36226	-.11712	.02416
4.0000	1.0000	.7981	-.25379	-.38642	-.14924	0
5.0000	0	1.1921	-.05667	-.23944	0	.17254
5.0000	.2000	1.0984	-.09724	-.28175	-.04057	.13023
5.0000	.4000	1.0124	-.13496	-.31836	-.07828	.09362
5.0000	.6000	.9327	-.17161	-.35107	-.11494	.06091
5.0000	.8000	.8576	-.20901	-.38168	-.15234	.03031
5.0000	1.0000	.7857	-.24896	-.41199	-.19228	0
6.0000	0	1.2696	-.00484	-.23280	0	.19506
6.0000	.2000	1.1487	-.05773	-.28189	-.05290	.14598
6.0000	.4000	1.0459	-.10399	-.32283	-.09915	.10504
6.0000	.6000	.9555	-.14671	-.35873	-.14188	.06914
6.0000	.8000	.8715	-.18902	-.39271	-.18418	.03516
6.0000	1.0000	.7884	-.23401	-.42787	-.22917	0

Component A: NaCl

Component B: Na_2SO_4

Reference: Y. C Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., 72, 4048 (1968).

Concentration range: I = 1.1 to 9.4 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.05821
$\underline{b}_{AB}^{(0,2)}$	0
$\underline{b}_{AB}^{(0,3)}$	0.000439
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0010

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.45397	1.24072
$\underline{a}^{(1)}$	0.04472	-0.06580
$\underline{a}^{(2)}$	0.018616	0.007263
$\underline{a}^{(3)}$	-0.0010724	-0.0001945
$\underline{a}^{(4)}$	0	0
std. dev. in Φ	0.0004	0.0021
$\underline{S}$	-1.17202	-1.17202

Remarks: See following reference. Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference. NaCl data good only to I = 6.

NACL(A)-NA2SO4(B) MIXTURES - WU, 01 03

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	.9354	-.18224	-.46628	0	.04057
1.0000	.2000	.9063	-.19134	-.47438	-.00909	.03248
1.0000	.4000	.8727	-.20043	-.48248	-.01819	.02437
1.0000	.6000	.8329	-.20953	-.49060	-.02729	.01626
1.0000	.8000	.7836	-.21864	-.49872	-.03639	.00813
1.0000	1.0000	.7193	-.22775	-.50685	-.04550	0
2.0000	0	.9834	-.17492	-.54093	0	.07798
2.0000	.2000	.9387	-.19265	-.55637	-.01773	.06255
2.0000	.4000	.8886	-.21041	-.57188	-.03550	.04703
2.0000	.6000	.8305	-.22822	-.58748	-.05331	.03144
2.0000	.8000	.7607	-.24607	-.60316	-.07116	.01576
2.0000	1.0000	.6719	-.26396	-.61892	-.08905	0
3.0000	0	1.0451	-.14612	-.57173	0	.12012
3.0000	.2000	.9859	-.17269	-.59521	-.02656	.09665
3.0000	.4000	.9201	-.19939	-.61896	-.05326	.07290
3.0000	.6000	.8448	-.22622	-.64298	-.08010	.04887
3.0000	.8000	.7553	-.25320	-.66728	-.10708	.02457
3.0000	1.0000	.6429	-.28031	-.69185	-.13419	0
4.0000	0	1.1158	-.10566	-.57900	0	.16593
4.0000	.2000	1.0432	-.14102	-.61089	-.03535	.13405
4.0000	.4000	.9626	-.17670	-.64342	-.07103	.10151
4.0000	.6000	.8708	-.21270	-.67661	-.10704	.06832
4.0000	.8000	.7620	-.24903	-.71045	-.14337	.03449
4.0000	1.0000	.6260	-.28569	-.74494	-.18002	0
5.0000	0	1.1919	-.05784	-.57090	0	.21377
5.0000	.2000	1.1073	-.10164	-.61111	-.04380	.17355
5.0000	.4000	1.0133	-.14607	-.65259	-.08823	.13207
5.0000	.6000	.9059	-.19114	-.69535	-.13330	.08932
5.0000	.8000	.7784	-.23685	-.73937	-.17901	.04529
5.0000	1.0000	.6189	-.28319	-.78467	-.22535	0
6.0000	0	1.2704	-.00558	-.55245	0	.26182
6.0000	.2000	1.1755	-.05716	-.60043	-.05158	.21385
6.0000	.4000	1.0697	-.10983	-.65059	-.10425	.16368
6.0000	.6000	.9481	-.16361	-.70296	-.15803	.11131
6.0000	.8000	.8030	-.21848	-.75752	-.21290	.05676
6.0000	1.0000	.6202	-.27445	-.81427	-.26887	0

Component A: NaCl

Component B: Na_2SO_4

Reference: R. F. Platford, J. Chem. Eng. Data, 13, 46 (1968).

Concentration range: I = 0.6 to 5.9 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.06245
$\underline{b}_{AB}^{(0,2)}$	0
$\underline{b}_{AB}^{(0,3)}$	0.000412
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0011

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.45397	1.24072
$\underline{a}^{(1)}$	0.04472	-0.06580
$\underline{a}^{(2)}$	0.018616	0.007263
$\underline{a}^{(3)}$	-0.0010724	-0.0001945
$\underline{a}^{(4)}$	0	0
std. dev. in Φ	0.0004	0.0021
$\underline{S}$	-1.17202	-1.17202

Remarks: See preceding reference. Reference electrolyte was NaCl. Original data supplied by R. F. Platford.

NACL(A)-NA2SO4(B) MIXTURES - PLATFORD 01 03

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
.7000	0	.9255	-.17567	-.42683	0	.02880
.7000	.2000	.9012	-.18234	-.43259	-.00667	.02305
.7000	.4000	.8729	-.18902	-.43834	-.01334	.01729
.7000	.6000	.8390	-.19569	-.44410	-.02002	.01153
.7000	.8000	.7968	-.20236	-.44987	-.02669	.00577
.7000	1.0000	.7411	-.20904	-.45564	-.03337	0
1.0000	0	.9354	-.18224	-.46813	0	.03873
1.0000	.2000	.9059	-.19152	-.47585	-.00928	.03100
1.0000	.4000	.8721	-.20080	-.48359	-.01856	.02326
1.0000	.6000	.8322	-.21009	-.49134	-.02784	.01552
1.0000	.8000	.7831	-.21938	-.49909	-.03713	.00776
1.0000	1.0000	.7193	-.22867	-.50685	-.04643	0
2.0000	0	.9834	-.17492	-.54465	0	.07427
2.0000	.2000	.9379	-.19302	-.55935	-.01810	.05957
2.0000	.4000	.8872	-.21116	-.57413	-.03625	.04479
2.0000	.6000	.8290	-.22934	-.58898	-.05443	.02994
2.0000	.8000	.7595	-.24756	-.60391	-.07265	.01501
2.0000	1.0000	.6719	-.26582	-.61892	-.09090	0
3.0000	0	1.0451	-.14612	-.57736	0	.11449
3.0000	.2000	.9847	-.17327	-.59974	-.02714	.09211
3.0000	.4000	.9181	-.20054	-.62239	-.05441	.06947
3.0000	.6000	.8425	-.22794	-.64528	-.08181	.04657
3.0000	.8000	.7535	-.25547	-.66844	-.10934	.02341
3.0000	1.0000	.6429	-.28312	-.69185	-.13700	0
4.0000	0	1.1158	-.10566	-.58662	0	.15832
4.0000	.2000	1.0415	-.14182	-.61706	-.03616	.12788
4.0000	.4000	.9598	-.17828	-.64811	-.07262	.09682
4.0000	.6000	.8676	-.21505	-.67978	-.10938	.06516
4.0000	.8000	.7595	-.25212	-.71205	-.14645	.03289
4.0000	1.0000	.6260	-.28949	-.74494	-.18383	0
5.0000	0	1.1919	-.05784	-.58059	0	.20407
5.0000	.2000	1.1051	-.10269	-.61902	-.04485	.16565
5.0000	.4000	1.0096	-.14813	-.65864	-.09029	.12602
5.0000	.6000	.9017	-.19417	-.69946	-.13633	.08521
5.0000	.8000	.7752	-.24080	-.74146	-.18296	.04320
5.0000	1.0000	.6189	-.28803	-.78467	-.23019	0
6.0000	0	1.2704	-.00558	-.56434	0	.24993
6.0000	.2000	1.1727	-.05848	-.61020	-.05290	.20407
6.0000	.4000	1.0650	-.11241	-.65813	-.10683	.15614
6.0000	.6000	.9428	-.16737	-.70812	-.16180	.10616
6.0000	.8000	.7988	-.22337	-.76016	-.21779	.05411
6.0000	1.0000	.6202	-.28039	-.81427	-.27481	0

Component A: NaCl

Component B: $MgSO_4$

Reference: Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., in press.

Concentration range: I = 0.7 to 7.8 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0
$\underline{b}_{AB}^{(0,2)}$	-0.00798
$\underline{b}_{AB}^{(0,3)}$	0.000855
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0012

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.45397	1.37486
$\underline{a}^{(1)}$	0.04472	-0.02712
$\underline{a}^{(2)}$	0.018616	0.004213
$\underline{a}^{(3)}$	-0.0010724	-0.0000950
$\underline{a}^{(4)}$	0	0
std. dev. in Φ	0.0004	0.0020
$\underline{S}$	-1.17202	-1.17202

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference. Data for NaCl good only to I = 6.

NACL(A)-MGSO4(B) MIXTURES - WU, 02 03

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
.5000	0	.9213	-.16528	-.71147	0	.04072
.5000	.2000	.9016	-.16843	-.71974	-.00215	.03245
.5000	.4000	.8736	-.17056	-.72795	-.00429	.02424
.5000	.6000	.8304	-.17268	-.73609	-.00641	.01610
.5000	.8000	.7550	-.17479	-.74418	-.00851	.00802
.5000	1.0000	.5895	-.17688	-.75219	-.01060	0
.7000	0	.9255	-.17567	-.76638	0	.05614
.7000	.2000	.9042	-.17870	-.77765	-.00303	.04467
.7000	.4000	.8740	-.18170	-.78920	-.00603	.03332
.7000	.6000	.8276	-.18467	-.80043	-.00900	.02209
.7000	.8000	.7466	-.18761	-.81154	-.01194	.01098
.7000	1.0000	.5692	-.19052	-.82252	-.01484	0
.8000	0	.9285	-.17864	-.78698	0	.06398
.8000	.2000	.9064	-.18213	-.80009	-.00349	.05087
.8000	.4000	.8753	-.18558	-.81304	-.00693	.03792
.8000	.6000	.8274	-.18898	-.82584	-.01034	.02512
.8000	.8000	.7441	-.19235	-.83848	-.01371	.01248
.8000	1.0000	.5617	-.19568	-.85096	-.01704	0
1.0000	0	.9354	-.18224	-.81908	0	.07997
1.0000	.2000	.9121	-.18668	-.83555	-.00444	.06350
1.0000	.4000	.8791	-.19106	-.85178	-.00882	.04727
1.0000	.6000	.8288	-.19538	-.86778	-.01314	.03127
1.0000	.8000	.7413	-.19964	-.88353	-.01740	.01552
1.0000	1.0000	.5501	-.20384	-.89905	-.02160	0
2.0000	0	.9834	-.17492	-.88444	0	.16663
2.0000	.2000	.9539	-.18483	-.91935	-.00992	.13172
2.0000	.4000	.9132	-.19455	-.95347	-.01963	.09760
2.0000	.6000	.8522	-.20407	-.98680	-.02915	.06428
2.0000	.8000	.7479	-.21339	-1.01933	-.03847	.03174
2.0000	1.0000	.5224	-.22251	-1.05107	-.04760	0
3.0000	0	1.0451	-.14612	-.87452	0	.26331
3.0000	.2000	1.0095	-.16245	-.93004	-.01633	.20779
3.0000	.4000	.9614	-.17842	-.98412	-.03230	.15371
3.0000	.6000	.8906	-.19404	-1.03678	-.04791	.10105
3.0000	.8000	.7717	-.20929	-1.08802	-.06317	.04981
3.0000	1.0000	.5177	-.22420	-1.13783	-.07807	0
4.0000	0	1.1158	-.10566	-.82667	0	.36695
4.0000	.2000	1.0743	-.12892	-.90386	-.02326	.28976
4.0000	.4000	1.0192	-.15170	-.97915	-.04604	.21447
4.0000	.6000	.9393	-.17401	-1.05254	-.06834	.14108
4.0000	.8000	.8068	-.19584	-1.12403	-.09018	.06959
4.0000	1.0000	.5270	-.21719	-1.19362	-.11153	0
5.0000	0	1.1919	-.05784	-.75538	0	.47412
5.0000	.2000	1.1453	-.08810	-.85416	-.03026	.37534
5.0000	.4000	1.0841	-.11787	-.95096	-.06003	.27854
5.0000	.6000	.9961	-.14714	-1.04578	-.08930	.18372
5.0000	.8000	.8514	-.17592	-1.13863	-.11808	.09087
5.0000	1.0000	.5479	-.20421	-1.22950	-.14636	0
6.0000	0	1.2704	-.00558	-.66939	0	.58127
6.0000	.2000	1.2201	-.04248	-.78849	-.03690	.46218
6.0000	.4000	1.1540	-.07902	-.90616	-.07344	.34450
6.0000	.6000	1.0595	-.11521	-1.02242	-.10963	.22824
6.0000	.8000	.9042	-.15104	-1.13725	-.14547	.11341
6.0000	1.0000	.5790	-.18652	-1.25066	-.18094	0

Component A: Na_2SO_4

Component B: $MgSO_4$

Reference: Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., 72, 4048 (1968).

Concentration range: I = 1.5 to 8.8 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.03178
$\underline{b}_{AB}^{(0,2)}$	-0.003055
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0010

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.24072	1.37486
$\underline{a}^{(1)}$	-0.06580	-0.02712
$\underline{a}^{(2)}$	0.007263	0.004213
$\underline{a}^{(3)}$	-0.0001945	-0.0000950
$\underline{a}^{(4)}$	0	0
std. dev. in Φ	0.0021	0.0020
$\underline{S}$	-1.17202	-1.17202

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference.

NA2SO4(A)-MGSO4(B) MIXTURES - WU, OI 02

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
1.0000	0.0	0.7193	-0.50685	-0.92117	0.0	-0.02212
1.0000	0.2000	0.7056	-0.49949	-0.91695	0.00736	-0.01790
1.0000	0.4000	0.6856	-0.49208	-0.91264	0.01478	-0.01359
1.0000	0.6000	0.6566	-0.48461	-0.90821	0.02224	-0.00916
1.0000	0.8000	0.6142	-0.47709	-0.90369	0.02976	-0.00464
1.0000	1.0000	0.5501	-0.46952	-0.89905	0.03734	0.0
2.0000	0.0	0.6719	-0.61892	-1.07874	0.0	-0.02766
2.0000	0.2000	0.6644	-0.60659	-1.07405	0.01232	-0.02298
2.0000	0.4000	0.6499	-0.59406	-1.06894	0.02486	-0.01787
2.0000	0.6000	0.6254	-0.58131	-1.06341	0.03760	-0.01234
2.0000	0.8000	0.5859	-0.56835	-1.05746	0.05056	-0.00638
2.0000	1.0000	0.5224	-0.55518	-1.05107	0.06374	0.0
3.0000	0.0	0.6429	-0.69185	-1.16765	0.0	-0.02982
3.0000	0.2000	0.6411	-0.67565	-1.16359	0.01620	-0.02576
3.0000	0.4000	0.6320	-0.65897	-1.15859	0.03288	-0.02076
3.0000	0.6000	0.6125	-0.64182	-1.15262	0.05004	-0.01479
3.0000	0.8000	0.5775	-0.62418	-1.14570	0.06767	-0.00787
3.0000	1.0000	0.5177	-0.60607	-1.13783	0.08579	0.0
4.0000	0.0	0.6260	-0.74494	-1.22386	0.0	-0.03025
4.0000	0.2000	0.6289	-0.72577	-1.22121	0.01917	-0.02759
4.0000	0.4000	0.6247	-0.70576	-1.21686	0.03918	-0.02324
4.0000	0.6000	0.6104	-0.68489	-1.21081	0.06004	-0.01719
4.0000	0.8000	0.5809	-0.66318	-1.20306	0.08176	-0.00945
4.0000	1.0000	0.5270	-0.64062	-1.19362	0.10432	0.0
5.0000	0.0	0.6189	-0.78467	-1.25931	0.0	-0.02981
5.0000	0.2000	0.6257	-0.76337	-1.25865	0.02130	-0.02915
5.0000	0.4000	0.6259	-0.74074	-1.25535	0.04393	-0.02585
5.0000	0.6000	0.6168	-0.71679	-1.24938	0.06788	-0.01988
5.0000	0.8000	0.5936	-0.69151	-1.24077	0.09316	-0.01127
5.0000	1.0000	0.5479	-0.66490	-1.22950	0.11977	0.0
6.0000	0.0	0.6202	-0.81427	-1.27983	0.0	-0.02917
6.0000	0.2000	0.6300	-0.79160	-1.28164	0.02267	-0.03097
6.0000	0.4000	0.6341	-0.76702	-1.27963	0.04725	-0.02896
6.0000	0.6000	0.6302	-0.74053	-1.27379	0.07374	-0.02313
6.0000	0.8000	0.6143	-0.71213	-1.26414	0.10214	-0.01348
6.0000	1.0000	0.5790	-0.68182	-1.25066	0.13246	0.0
7.0000	0.0	0.6287	-0.83577	-1.28902	0.0	-0.02890
7.0000	0.2000	0.6406	-0.81244	-1.29364	0.02334	-0.03352
7.0000	0.4000	0.6482	-0.78650	-1.29306	0.04927	-0.03294
7.0000	0.6000	0.6496	-0.75796	-1.28728	0.07781	-0.02716
7.0000	0.8000	0.6418	-0.72683	-1.27630	0.10894	-0.01618
7.0000	1.0000	0.6192	-0.69309	-1.26012	0.14268	0.0
8.0000	0.0	0.6432	-0.85062	-1.28946	0.0	-0.02957
8.0000	0.2000	0.6564	-0.82727	-1.29713	0.02335	-0.03724
8.0000	0.4000	0.6669	-0.80052	-1.29801	0.05010	-0.03812
8.0000	0.6000	0.6738	-0.77038	-1.29210	0.08024	-0.03221
8.0000	0.8000	0.6751	-0.73684	-1.27939	0.11378	-0.01950
8.0000	1.0000	0.6675	-0.69990	-1.25989	0.15072	0.0
9.0000	0.0	0.6626	-0.85998	-1.28322	0.0	-0.03171
9.0000	0.2000	0.6762	-0.83721	-1.29407	0.02277	-0.04256
9.0000	0.4000	0.6892	-0.81014	-1.29633	0.04984	-0.04482
9.0000	0.6000	0.7016	-0.77877	-1.28998	0.08121	-0.03847
9.0000	0.8000	0.7131	-0.74311	-1.27505	0.11687	-0.02354
9.0000	1.0000	0.7228	-0.70314	-1.25151	0.15684	0.0

Component A: Na_2SO_4

Component B: $MgCl_2$

Reference: Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., in press.

Concentration range: I = 0.9 to 8.2 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0
$\underline{b}_{AB}^{(0,2)}$	-0.00657
$\underline{b}_{AB}^{(0,3)}$	0.000231
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in ϕ	0.0022

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.24072	1.60067
$\underline{a}^{(1)}$	-0.06580	0.06633
$\underline{a}^{(2)}$	0.007263	0.009003
$\underline{a}^{(3)}$	-0.0001945	-0.0002545
$\underline{a}^{(4)}$	0	0
std. dev. in ϕ	0.0021	0.0039
$\underline{S}$	-1.17202	-1.17202

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference.

NA2SO4(A)-MGCL2(B) MIXTURES - WU, D2 D3

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	.7193	-.50685	-.40839	0	-.08028
1.0000	.2000	.7546	-.49157	-.39255	.01528	-.06444
1.0000	.4000	.7905	-.47618	-.37660	.03067	-.04850
1.0000	.6000	.8268	-.46068	-.36055	.04617	-.03244
1.0000	.8000	.8636	-.44508	-.34438	.06178	-.01627
1.0000	1.0000	.9010	-.42936	-.32811	.07749	0
2.0000	0	.6719	-.61892	-.45050	0	-.14689
2.0000	.2000	.7331	-.59255	-.42195	.02637	-.11834
2.0000	.4000	.7963	-.56576	-.39299	.05316	-.08937
2.0000	.6000	.8614	-.53856	-.36361	.08036	-.06000
2.0000	.8000	.9285	-.51094	-.33382	.10797	-.03021
2.0000	1.0000	.9976	-.48292	-.30361	.13600	0
3.0000	0	.6429	-.69185	-.46091	0	-.21516
3.0000	.2000	.7280	-.65537	-.41965	.03649	-.17389
3.0000	.4000	.8174	-.61800	-.37750	.07386	-.13175
3.0000	.6000	.9110	-.57974	-.33447	.11211	-.08871
3.0000	.8000	1.0088	-.54061	-.29055	.15125	-.04480
3.0000	1.0000	1.1108	-.50059	-.24575	.19127	0
4.0000	0	.6260	-.74494	-.45579	0	-.28604
4.0000	.2000	.7337	-.69898	-.40155	.04596	-.23181
4.0000	.4000	.8487	-.65153	-.34583	.09340	-.17608
4.0000	.6000	.9709	-.60261	-.28862	.14233	-.11887
4.0000	.8000	1.1003	-.55219	-.22993	.19274	-.06018
4.0000	1.0000	1.2370	-.50029	-.16975	.24464	0
5.0000	0	.6189	-.78467	-.44039	0	-.35956
5.0000	.2000	.7483	-.72973	-.37286	.05494	-.29202
5.0000	.4000	.8885	-.67261	-.30313	.11206	-.22230
5.0000	.6000	1.0396	-.61330	-.23122	.17137	-.15039
5.0000	.8000	1.2015	-.55180	-.15712	.23286	-.07629
5.0000	1.0000	1.3743	-.48812	-.08083	.29654	0
6.0000	0	.6202	-.81427	-.41727	0	-.43551
6.0000	.2000	.7705	-.75075	-.33608	.06352	-.35432
6.0000	.4000	.9358	-.68427	-.25193	.13000	-.27017
6.0000	.6000	1.1160	-.61484	-.16483	.19943	-.18307
6.0000	.8000	1.3112	-.54245	-.07477	.27182	-.09301
6.0000	1.0000	1.5213	-.46710	.01824	.34717	0
7.0000	0	.6287	-.83577	-.38797	0	-.51360
7.0000	.2000	.7994	-.76397	-.29277	.07180	-.41840
7.0000	.4000	.9896	-.68840	-.19381	.14737	-.31944
7.0000	.6000	1.1992	-.60908	-.09109	.22669	-.21672
7.0000	.8000	1.4282	-.52599	.01539	.30978	-.11024
7.0000	1.0000	1.6766	-.43914	.12563	.39663	0
8.0000	0	.6432	-.85062	-.35362	0	-.59351
8.0000	.2000	.8339	-.77076	-.24406	.07986	-.48395
8.0000	.4000	1.0489	-.68632	-.12993	.16429	-.36982
8.0000	.6000	1.2880	-.59732	-.01123	.25330	-.25111
8.0000	.8000	1.5513	-.50375	.11204	.34687	-.12784
8.0000	1.0000	1.8389	-.40560	.23988	.44501	0

Component A: KCl

Component B: CsCl

Reference: R. A. Robinson, Trans. Faraday Soc., 49, 1147 (1953).

Concentration range: I = 0.5 to 5.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0414
$\underline{b}_{AB}^{(0,2)}$	-0.0261
$\underline{b}_{AB}^{(0,3)}$	0.00286
$\underline{b}_{AB}^{(1,2)}$	-0.0040
$\underline{b}_{AB}^{(1,3)}$	0.00111
std. dev. in Φ	0.0016

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	-0.06408	-0.1724
$\underline{a}^{(2)}$	0.05244	0.0834
$\underline{a}^{(3)}$	-0.01124	-0.01324
$\underline{a}^{(4)}$	0.000918	0.000722
std. dev. in Φ	0.0010	0.0059
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was KCl.

KCL(A)-CSCL(B) - RMBINSON (1953) - 01 02 03 12 13

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/GO) A	LOG(G/GO) B
.5000	0	.9001	-.18452	-.19174	0	.01385
.5000	.2000	.8966	-.18592	-.19457	-.00140	.01102
.5000	.4000	.8925	-.18724	-.19737	-.00272	.00822
.5000	.6000	.8879	-.18848	-.20014	-.00396	.00545
.5000	.8000	.8827	-.18965	-.20288	-.00513	.00271
.5000	1.0000	.8768	-.19074	-.20559	-.00623	0
1.0000	0	.8962✓	-.21715	-.23145	0	.02329
1.0000	.2000	.8896	-.21981	-.23632	-.00266	.01842
1.0000	.4000	.8824	-.22220	-.24109	-.00505	.01365
1.0000	.6000	.8746	-.22432	-.24575	-.00717	.00898
1.0000	.8000	.8660	-.22615	-.25031	-.00901	.00443
1.0000	1.0000	.8565✓	-.22771	-.25474	-.01056	0
2.0000	0	.9122	-.23977	-.26748	0	.03152
2.0000	.2000	.9008	-.24449	-.27448	-.00473	.02452
2.0000	.4000	.8898	-.24841	-.28120	-.00864	.01780
2.0000	.6000	.8790	-.25146	-.28757	-.01169	.01143
2.0000	.8000	.8679	-.25357	-.29352	-.01380	.00548
2.0000	1.0000	.8563	-.25469	-.29900	-.01492	0
3.0000	0	.9375	-.24222	-.28196	0	.03057
3.0000	.2000	.9229	-.24842	-.28934	-.00620	.02319
3.0000	.4000	.9101	-.25337	-.29629	-.01116	.01624
3.0000	.6000	.8987	-.25688	-.30262	-.01466	.00992
3.0000	.8000	.8886	-.25872	-.30810	-.01650	.00443
3.0000	1.0000	.8794	-.25869	-.31253	-.01647	0
4.0000	0	.9644✓	-.23675	-.28694	0	.02731
4.0000	.2000	.9476	-.24404	-.29408	-.00728	.02017
4.0000	.4000	.9331	-.25013	-.30088	-.01338	.01337
4.0000	.6000	.9211	-.25455	-.30684	-.01780	.00741
4.0000	.8000	.9121	-.25679	-.31146	-.02003	.00279
4.0000	1.0000	.9064✓	-.25635	-.31425	-.01960	0
5.0000	0	.9977	-.22431	-.28339	0	.02966
5.0000	.2000	.9785	-.23270	-.29107	-.00839	.02199
5.0000	.4000	.9600	-.24083	-.29884	-.01652	.01421
5.0000	.6000	.9441	-.24775	-.30574	-.02344	.00731
5.0000	.8000	.9326	-.25248	-.31080	-.02816	.00225
5.0000	1.0000	.9276	-.25405	-.31305	-.02973	0

Component A: KCl

Component B: $CaCl_2$

Reference: R. A. Robinson and A. K. Covington, J. Res. Nat. Bur. Stand., 72A, 239 (1968).

Concentration range: I = 0.9 to 5.0 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.03332
$\underline{b}_{AB}^{(0,2)}$	-0.01036
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0021

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	-0.06408	0.05848
$\underline{a}^{(2)}$	0.05244	0.005532
$\underline{a}^{(3)}$	-0.01124	-0.000068
$\underline{a}^{(4)}$	0.000918	0
std. dev. in Φ	0.0010	0.0054
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was KCl. Parameters and osmotic coefficients given in reference. Equation for $CaCl_2$ derived from data supplied by R. A. Robinson (see reference).

KCl(A)-CACL2(B) MIXTURES - FROM RAR (1966)

			LOG GAMMA		LOG(G/G0)	
I	Y(B)	PHI	A	B	A	B
1.0000	0	.8962	-.21715	-.37751	0	-.02509
1.0000	.2000	.8963	-.21237	-.37285	.00477	-.02043
1.0000	.4000	.8952	-.20751	-.36802	.00964	-.01559
1.0000	.6000	.8925	-.20256	-.36300	.01459	-.01057
1.0000	.8000	.8874	-.19751	-.35780	.01963	-.00538
1.0000	1.0000	.8784	-.19238	-.35243	.02477	0
2.0000	0	.9122	-.23977	-.38253	0	-.03746
2.0000	.2000	.9194	-.23275	-.37648	.00702	-.03140
2.0000	.4000	.9271	-.22538	-.36971	.01439	-.02463
2.0000	.6000	.9356	-.21764	-.36222	.02213	-.01714
2.0000	.8000	.9452	-.20955	-.35401	.03022	-.00893
2.0000	1.0000	.9566	-.20109	-.34508	.03868	0
3.0000	0	.9375	-.24222	-.35766	0	-.05187
3.0000	.2000	.9503	-.23402	-.35052	.00820	-.04473
3.0000	.4000	.9661	-.22500	-.34177	.01722	-.03598
3.0000	.6000	.9859	-.21518	-.33140	.02704	-.02560
3.0000	.8000	1.0119	-.20455	-.31940	.03767	-.01361
3.0000	1.0000	1.0478	-.19311	-.30579	.04911	0
4.0000	0	.9644	-.23675	-.32367	0	-.07351
4.0000	.2000	.9820	-.22790	-.31473	.00885	-.06457
4.0000	.4000	1.0056	-.21760	-.30290	.01915	-.05274
4.0000	.6000	1.0378	-.20587	-.28820	.03088	-.03804
4.0000	.8000	1.0828	-.19270	-.27062	.04405	-.02046
4.0000	1.0000	1.1485	-.17809	-.25016	.05866	0
5.0000	0	.9977	-.22431	-.28113	0	-.09801
5.0000	.2000	1.0184	-.21578	-.27052	.00853	-.08741
5.0000	.4000	1.0489	-.20500	-.25542	.01931	-.07230
5.0000	.6000	1.0935	-.19197	-.23581	.03234	-.05270
5.0000	.8000	1.1590	-.17669	-.21171	.04762	-.02860
5.0000	1.0000	1.2582	-.15917	-.18312	.06515	0

Component A: $BaCl_2$

Component B: KCl

Reference: R. A. Robinson and V. E. Bower, J. Res. Nat. Bur. Stand., 69A, 439 (1965).

Concentration range: I = 0.9 to 4.7 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	0.0197
$\underline{b}_{AB}^{(0,2)}$	-0.0295
$\underline{b}_{AB}^{(0,3)}$	0.00451
$\underline{b}_{AB}^{(1,2)}$	0.00288
$\underline{b}_{AB}^{(1,3)}$	-0.00166
std. dev. in Φ	0.0010

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.5	1.5
$\underline{a}^{(1)}$	0.03166	-0.06408
$\underline{a}^{(2)}$	0	0.05244
$\underline{a}^{(3)}$	0.000912	-0.01124
$\underline{a}^{(4)}$	-0.0001006	0.000918
std. dev. in Φ	0.0007	0.0010
$\underline{S}$	-1.17082	-1.17082

Remarks: Reference electrolyte was KCl. Equation for $BaCl_2$ obtained from data in reference.

BACL2(A)-KCL(B) MIXTURES, ROBINSON AND BOWER(1965), 01 02 03 12 13

			LOG GAMMA		LOG(G/GO)	
I	Y(B)	PHI	A	B	A	B
.5000	0	.8365	-.33513	-.17522	0	.00930
.5000	.2000	.8581	-.33795	-.17722	-.00279	.00729
.5000	.4000	.8734	-.34065	-.17916	-.00550	.00536
.5000	.6000	.8847	-.34327	-.18102	-.00812	.00350
.5000	.8000	.8933	-.34581	-.18280	-.01065	.00172
.5000	1.0000	.9001	-.34826	-.18452	-.01311	0
1.0000	0	.8469	-.37881	-.20374	0	.01340
1.0000	.2000	.8628	-.38371	-.20694	-.00490	.01021
1.0000	.4000	.8742	-.38827	-.20985	-.00946	.00729
1.0000	.6000	.8831	-.39249	-.21253	-.01368	.00462
1.0000	.8000	.8902	-.39641	-.21495	-.01760	.00219
1.0000	1.0000	.8962	-.40006	-.21715	-.02124	0
2.0000	0	.8871	-.40242	-.22754	0	.01223
2.0000	.2000	.8896	-.41097	-.23143	-.00856	.00834
2.0000	.4000	.8941	-.41818	-.23451	-.01576	.00526
2.0000	.6000	.8996	-.42422	-.23686	-.02180	.00291
2.0000	.8000	.9057	-.42927	-.23858	-.02686	.00118
2.0000	1.0000	.9122	-.43353	-.23977	-.03111	0
3.0000	0	.9358	-.39721	-.23664	0	.00558
3.0000	.2000	.9236	-.40983	-.23965	-.01261	.00257
3.0000	.4000	.9216	-.41951	-.24141	-.02230	.00081
3.0000	.6000	.9249	-.42689	-.24221	-.02967	.00001
3.0000	.8000	.9308	-.43258	-.24238	-.03536	-.00016
3.0000	1.0000	.9375	-.43720	-.24222	-.03999	0
4.0000	0	.9897	-.37866	-.23949	0	-.00274
4.0000	.2000	.9625	-.39527	-.23991	-.01660	-.00315
4.0000	.4000	.9553	-.40685	-.23910	-.02819	-.00235
4.0000	.6000	.9568	-.41490	-.23781	-.03624	-.00106
4.0000	.8000	.9611	-.42089	-.23679	-.04223	-.00003
4.0000	1.0000	.9644	-.42630	-.23675	-.04763	0
5.0000	0	1.0454	-.35289	-.23855	0	-.01424
5.0000	.2000	1.0086	-.37081	-.23344	-.01792	-.00913
5.0000	.4000	1.0006	-.38121	-.22802	-.02832	-.00370
5.0000	.6000	1.0024	-.38696	-.22373	-.03408	.00059
5.0000	.8000	1.0035	-.39095	-.22201	-.03807	.00230
5.0000	1.0000	.9977	-.39607	-.22431	-.04319	0

Component A: $MgSO_4$

Component B: $MgCl_2$

Reference: Y. C. Wu, R. M. Rush, and G. Scatchard, J. Phys. Chem., 72, 4048 (1968).

Concentration range: I = 0.8 to 6.8 Temperature: 25°

$\underline{b}_{AB}^{(0,1)}$	-0.03681
$\underline{b}_{AB}^{(0,2)}$	0
$\underline{b}_{AB}^{(0,3)}$	0
$\underline{b}_{AB}^{(1,2)}$	0
$\underline{b}_{AB}^{(1,3)}$	0
std. dev. in Φ	0.0009

Two-component parameters:

	A	B
$\underset{\sim}{a}$	1.37486	1.60067
$\underline{a}^{(1)}$	-0.02712	0.06633
$\underline{a}^{(2)}$	0.004213	0.009003
$\underline{a}^{(3)}$	-0.0000950	-0.0002545
$\underline{a}^{(4)}$	0	0
std. dev. in φ	0.0020	0.0039
$\underline{S}$	-1.17202	-1.17202

Remarks: Reference electrolyte was NaCl. Parameters and osmotic coefficients given in reference.

MGSO4(A)-MGCL2(B) MIXTURES - WU 01

I	Y(B)	PHI	LOG GAMMA A	LOG GAMMA B	LOG(G/G0) A	LOG(G/G0) B
.5000	0	.5895	-.75219	-.34604	0	-.03864
.5000	.2000	.6765	-.74313	-.33831	.00906	-.03091
.5000	.4000	.7408	-.73407	-.33059	.01812	-.02318
.5000	.6000	.7908	-.72501	-.32286	.02718	-.01545
.5000	.8000	.8314	-.71595	-.31513	.03624	-.00773
.5000	1.0000	.8653	-.70689	-.30740	.04530	0
.7000	0	.5692	-.82252	-.37253	0	-.05158
.7000	.2000	.6651	-.81084	-.36222	.01168	-.04126
.7000	.4000	.7366	-.79916	-.35190	.02336	-.03095
.7000	.6000	.7927	-.78748	-.34159	.03504	-.02063
.7000	.8000	.8387	-.77580	-.33127	.04672	-.01032
.7000	1.0000	.8776	-.76412	-.32095	.05840	0
.9000	0	.5554	-.87626	-.39130	0	-.06433
.9000	.2000	.6590	-.86204	-.37843	.01422	-.05146
.9000	.4000	.7368	-.84781	-.36557	.02845	-.03860
.9000	.6000	.7985	-.83359	-.35270	.04267	-.02573
.9000	.8000	.8494	-.81937	-.33983	.05689	-.01287
.9000	1.0000	.8927	-.80515	-.32697	.07111	0
1.0000	0	.5501	-.89905	-.39878	0	-.07068
1.0000	.2000	.6572	-.88357	-.38465	.01548	-.05654
1.0000	.4000	.7380	-.86809	-.37051	.03096	-.04241
1.0000	.6000	.8022	-.85260	-.35638	.04645	-.02827
1.0000	.8000	.8554	-.83712	-.34224	.06193	-.01414
1.0000	1.0000	.9010	-.82164	-.32811	.07741	0
2.0000	0	.5224	-1.05107	-.43824	0	-.13463
2.0000	.2000	.6612	-1.02280	-.41132	.02828	-.10770
2.0000	.4000	.7687	-.99452	-.38439	.05655	-.08078
2.0000	.6000	.8567	-.96624	-.35746	.08483	-.05385
2.0000	.8000	.9317	-.93797	-.33054	.11311	-.02693
2.0000	1.0000	.9976	-.90969	-.30361	.14138	0
3.0000	0	.5177	-1.13783	-.44657	0	-.20082
3.0000	.2000	.6860	-1.09587	-.40641	.04196	-.16066
3.0000	.4000	.8188	-1.05390	-.36625	.08393	-.12049
3.0000	.6000	.9294	-1.01194	-.32608	.12589	-.08033
3.0000	.8000	1.0253	-.96997	-.28592	.16786	-.04016
3.0000	1.0000	1.1108	-.92801	-.24575	.20982	0
4.0000	0	.5270	-1.19362	-.43931	0	-.26956
4.0000	.2000	.7244	-1.13694	-.38540	.05667	-.21565
4.0000	.4000	.8822	-1.08027	-.33148	.11335	-.16174
4.0000	.6000	1.0153	-1.02360	-.27757	.17002	-.10782
4.0000	.8000	1.1319	-.96693	-.22366	.22669	-.05391
4.0000	1.0000	1.2370	-.91025	-.16975	.28337	0
5.0000	0	.5479	-1.22950	-.42147	0	-.34064
5.0000	.2000	.7743	-1.15718	-.35335	.07232	-.27251
5.0000	.4000	.9570	-1.08486	-.28522	.14464	-.20439
5.0000	.6000	1.1125	-1.01255	-.21709	.21695	-.13626
5.0000	.8000	1.2497	-.94023	-.14896	.28927	-.06813
5.0000	1.0000	1.3743	-.86791	-.08083	.36159	0
6.0000	0	.5790	-1.25066	-.39549	0	-.41373
6.0000	.2000	.8342	-1.16190	-.31274	.08876	-.33098
6.0000	.4000	1.0417	-1.07313	-.22999	.17753	-.24824
6.0000	.6000	1.2195	-.98437	-.14725	.26629	-.16549
6.0000	.8000	1.3773	-.89560	-.06450	.35506	-.08275
6.0000	1.0000	1.5213	-.80684	.01824	.44382	0

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202. C. S. Patterson, Department of Chemistry, Furman University, Greenville, S.C. 29613
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