

## Supplemental Data for:

## The Acute Toxicity of Major Ion Salts to Ceriodaphnia dubia. II. Empirical Relationships in Binary Salt Mixtures

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Table S-1. Estimated 48-h median lethal conditions for *Ceriodaphnia dubia* exposed to various binary chemical mixtures. LC50A and LC50B denote total added concentrations of the two chemicals in the median lethal mixture. Lower (LCL) and upper (LCL) confidence limits provided for LC50A and LC50B are ≥95%. Total concentrations of the ionic components and activities of selected species, and both nominal (ideal) and estimated osmolarities, are provided. All numbers are nominal concentrations, except measured calcium concentrations are indicated in red.

Experiment#	Chemical A				Chemical B				Total Concentration of Ionic Component							pH	Activity of Chemical Species								Osmolarity		
	Identity	LC50A	LCLA	UCLA	Identity	LC50B	LCLB	UCLB	Na	K	Ca	Mg	Cl	SO <sub>4</sub>	Alkalinity		Ca <sup>+2</sup>	Mg <sup>+2</sup>	Na <sup>+1</sup>	K <sup>+1</sup>	Cl <sup>-1</sup>	SO <sub>4</sub> <sup>-2</sup>	CO <sub>3</sub> <sup>-2</sup>	HCO <sub>3</sub> <sup>-</sup>	H <sub>2</sub> CO <sub>3</sub> *	Nominal	Estimated
		mM	mM	mM		mM	mM	mM	mM	mM	mM	mM	mM	meq/L		mM	mM	mM	mM	mM	mM	mM	mM	mM	mM	mOsm/L	mOsm/L
<b>MIXTURES OF TWO SODIUM SALTS</b>																											
TDS-13-33	NaCl	33.67	31.43	36.06	Na <sub>2</sub> SO <sub>4</sub>	0.00	0.00	0.00	33.95	0.04	0.364	0.17	33.89	0.16	0.86	7.90	0.172	0.08	28.19	0.03	28.14	0.07	0.00	0.70	0.02	69.4	65.4
TDS-13-33	NaCl	30.97	27.69	34.64	Na <sub>2</sub> SO <sub>4</sub>	4.52	4.04	5.06	40.29	0.04	0.364	0.17	31.19	4.68	0.86	7.95	0.136	0.06	32.62	0.03	25.44	1.95	0.00	0.68	0.02	77.6	71.7
TDS-13-33	NaCl	23.42	21.91	25.04	Na <sub>2</sub> SO <sub>4</sub>	8.52	7.97	9.11	40.74	0.04	0.364	0.17	23.64	8.68	0.86	7.95	0.119	0.06	32.61	0.03	19.18	3.56	0.00	0.68	0.02	74.5	67.8
TDS-13-33	NaCl	17.41	15.83	19.11	Na <sub>2</sub> SO <sub>4</sub>	12.68	11.53	13.92	43.05	0.04	0.364	0.17	17.63	12.84	0.86	7.95	0.105	0.05	33.98	0.03	14.19	5.10	0.00	0.67	0.02	74.9	67.1
TDS-13-33	NaCl	11.69	10.94	12.50	Na <sub>2</sub> SO <sub>4</sub>	17.06	15.96	18.24	46.09	0.04	0.364	0.17	11.91	17.22	0.86	8.00	0.094	0.05	35.87	0.03	9.50	6.62	0.00	0.67	0.01	76.6	67.5
TDS-13-33	NaCl	5.74	5.37	6.15	Na <sub>2</sub> SO <sub>4</sub>	20.87	19.51	22.33	47.76	0.04	0.364	0.17	5.96	21.03	0.86	8.00	0.087	0.04	36.78	0.03	4.73	7.91	0.00	0.66	0.01	76.2	66.1
TDS-13-33	NaCl	0.00	0.00	0.00	Na <sub>2</sub> SO <sub>4</sub>	24.53	22.90	26.27	49.34	0.04	0.364	0.17	0.22	24.69	0.86	8.00	0.081	0.04	37.64	0.03	0.17	9.11	0.00	0.66	0.01	75.7	64.6
TDS-14-02	NaHCO <sub>3</sub>	25.36	23.41	27.52	NaCl	0.00	0.00	0.00	25.64	0.04	0.164	0.17	0.22	0.16	26.22	9.35	0.034	0.05	21.06	0.03	0.18	0.08	1.62	15.40	0.02	52.6	44.1
TDS-14-02	NaHCO <sub>3</sub>	23.14	21.79	24.58	NaCl	6.46	6.08	6.86	29.88	0.04	0.152	0.17	6.68	0.16	24.00	9.30	0.035	0.05	24.44	0.03	5.58	0.07	1.33	14.25	0.02	61.1	52.6
TDS-14-02	NaHCO <sub>3</sub>	18.47	16.72	20.40	NaCl	12.83	11.62	14.17	31.58	0.04	0.220	0.17	13.05	0.16	19.33	9.25	0.058	0.06	25.90	0.03	10.88	0.07	0.98	11.71	0.01	64.5	57.0
TDS-14-02	NaHCO <sub>3</sub>	13.20	12.10	14.40	NaCl	18.37	16.83	20.04	31.85	0.04	0.253	0.17	18.59	0.16	14.06	9.10	0.082	0.06	26.32	0.03	15.50	0.07	0.54	9.21	0.02	65.1	59.2
TDS-14-02	NaHCO <sub>3</sub>	8.84	8.13	9.61	NaCl	24.63	22.67	26.80	33.75	0.04	0.364	0.17	24.85	0.16	9.70	8.95	0.138	0.07	27.90	0.03	20.64	0.07	0.28	6.69	0.02	69.0	63.8
TDS-14-02	NaHCO <sub>3</sub>	4.41	4.04	4.81	NaCl	30.60	28.05	33.39	35.29	0.04	0.364	0.17	30.82	0.16	5.27	8.75	0.156	0.07	29.17	0.03	25.52	0.07	0.10	3.85	0.02	72.1	67.4
TDS-14-02	NaHCO <sub>3</sub>	0.00	0.00	0.00	NaCl	30.97	29.14	32.91	31.25	0.04	0.364	0.17	31.19	0.16	0.86	7.90	0.176	0.08	26.10	0.03	26.05	0.07	0.00	0.70	0.02	64.0	60.3
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	21.72	19.89	23.81	NaHCO <sub>3</sub>	0.00	0.00	0.00	43.72	0.04	0.364	0.17	0.22	21.88	0.86	7.95	0.085	0.04	33.76	0.03	0.17	8.40	0.00	0.67	0.02	67.2	57.7
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	17.75	15.88	19.84	NaHCO <sub>3</sub>	3.74	3.34	4.18	39.52	0.04	0.364	0.17	0.22	17.91	4.60	8.75	0.089	0.05	30.91	0.03	0.17	7.16	0.09	3.26	0.01	62.8	54.3
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	17.53	15.68	19.61	NaHCO <sub>3</sub>	9.19	8.22	10.28	44.53	0.04	0.364	0.17	0.22	17.69	10.05	9.00	0.082	0.04	34.50	0.03	0.17	6.85	0.30	6.43	0.01	73.1	62.6
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	12.30	10.83	13.84	NaHCO <sub>3</sub>	12.92	11.37	14.53	37.80	0.04	0.364	0.17	0.22	12.46	13.78	9.10	0.084	0.05	29.82	0.03	0.18	5.14	0.51	8.63	0.02	64.8	55.9
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	6.16	5.63	6.75	NaHCO <sub>3</sub>	12.97	11.84	14.20	25.57	0.04	0.364	0.17	0.22	6.32	13.83	9.15	0.097	0.05	20.95	0.03	0.18	2.96	0.59	8.94	0.01	46.5	45.6
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	4.59	4.26	4.94	NaHCO <sub>3</sub>	24.03	22.29	25.90	33.49	0.04	0.364	0.17	0.22	4.75	24.89	9.30	0.073	0.05	26.79	0.03	0.18	2.09	1.33	14.26	0.02	63.9	53.5
TDS-14-07	Na <sub>2</sub> SO <sub>4</sub>	0.00	0.00	0.00	NaHCO <sub>3</sub>	27.61	25.07	30.40	27.89	0.04	0.174	0.17	0.22														

TDS-13-38	MgCl <sub>2</sub>	0.00	0.00	0.00	MgSO <sub>4</sub>	16.41	14.73	18.46	0.28	0.04	0.364	16.58	0.22	16.57	0.86	7.95	0.108	5.31	0.23	0.03	0.17	5.27	0.00	0.64	0.02	34.9	24.5
TDS-14-18	MgCO <sub>3</sub>	9.16	8.17	10.27	MgCl <sub>2</sub>	0.00	0.00	0.00	0.28	0.04	0.404	9.33	0.22	0.16	19.18	9.10	0.135	3.75	0.24	0.03	0.18	0.06	0.62	10.50	0.02	29.6	14.3
TDS-14-18	MgCO <sub>3</sub>	9.00	8.10	10.00	MgCl <sub>2</sub>	1.61	1.45	1.79	0.28	0.04	0.404	10.78	3.44	0.16	18.86	9.10	0.134	4.25	0.24	0.03	2.89	0.06	0.58	9.91	0.02	34.0	17.8
TDS-14-18	MgCO <sub>3</sub>	6.70	5.96	7.80	MgCl <sub>2</sub>	2.99	2.66	3.48	0.28	0.04	0.393	9.86	6.20	0.16	14.26	8.90	0.154	4.31	0.24	0.03	5.21	0.06	0.32	8.60	0.02	31.2	19.0
TDS-14-18	MgCO <sub>3</sub>	4.83	4.26	5.66	MgCl <sub>2</sub>	4.32	3.81	5.07	0.28	0.04	0.385	9.32	8.86	0.16	10.52	8.85	0.164	4.28	0.24	0.03	7.46	0.06	0.22	6.53	0.02	29.6	20.1
TDS-14-18	MgCO <sub>3</sub>	2.70	2.39	3.09	MgCl <sub>2</sub>	4.83	4.28	5.54	0.28	0.04	0.376	7.70	9.88	0.16	6.26	8.70	0.182	3.87	0.24	0.03	8.40	0.06	0.10	4.27	0.02	24.7	18.7
TDS-14-18	MgCO <sub>3</sub>	1.38	1.24	1.54	MgCl <sub>2</sub>	6.15	5.54	6.88	0.28	0.04	0.370	7.70	12.52	0.16	3.62	8.45	0.190	3.99	0.24	0.03	10.62	0.06	0.04	2.66	0.02	24.7	20.5
TDS-14-18	MgCO <sub>3</sub>	0.00	0.00	0.00	MgCl <sub>2</sub>	9.75	8.06	11.81	0.28	0.04	0.364	9.92	19.72	0.16	0.86	7.80	0.182	4.91	0.24	0.03	16.41	0.05	0.00	0.67	0.02	31.3	26.9
TDS-14-19	MgCO <sub>3</sub>	9.11	8.40	9.89	MgSO <sub>4</sub>	0.00	0.00	0.00	0.28	0.04	0.404	9.28	0.22	0.16	19.08	9.15	0.132	3.68	0.24	0.03	0.18	0.06	0.67	10.09	0.02	29.5	14.0
TDS-14-19	MgCO <sub>3</sub>	7.55	6.83	8.36	MgSO <sub>4</sub>	2.47	2.24	2.74	0.28	0.04	0.397	10.19	0.22	2.63	15.96	9.10	0.130	3.92	0.24	0.03	0.18	1.01	0.51	8.57	0.02	29.7	15.3
TDS-14-19	MgCO <sub>3</sub>	6.08	5.49	6.73	MgSO <sub>4</sub>	4.95	4.47	5.49	0.28	0.04	0.391	11.20	0.22	5.11	13.02	9.00	0.129	4.21	0.23	0.03	0.18	1.88	0.34	7.34	0.02	30.2	17.2
TDS-14-19	MgCO <sub>3</sub>	4.58	4.09	5.04	MgSO <sub>4</sub>	7.48	6.68	8.23	0.28	0.04	0.384	12.23	0.22	7.64	10.02	8.90	0.126	4.46	0.23	0.03	0.18	2.71	0.22	5.91	0.02	30.8	18.5
TDS-14-19	MgCO <sub>3</sub>	3.03	2.78	3.31	MgSO <sub>4</sub>	9.91	9.08	10.81	0.28	0.04	0.377	13.11	0.22	10.07	6.92	8.80	0.122	4.64	0.23	0.03	0.18	3.48	0.13	4.26	0.02	31.0	19.9
TDS-14-19	MgCO <sub>3</sub>	1.60	1.51	1.70	MgSO <sub>4</sub>	13.03	12.27	13.84	0.28	0.04	0.371	14.80	0.22	13.19	4.06	8.55	0.116	5.00	0.23	0.03	0.18	4.36	0.05	2.72	0.02	33.0	22.4
TDS-14-19	MgCO <sub>3</sub>	0.00	0.00	0.00	MgSO <sub>4</sub>	15.88	13.93	18.09	0.28	0.04	0.364	16.05	0.22	16.04	0.86	7.85	0.109	5.20	0.23	0.03	0.17	5.16	0.00	0.65	0.02	33.8	24.7
TDS-14-15	MgCl <sub>2</sub>	19.81	18.64	21.07	MgSO <sub>4</sub>	0.00	0.00	0.00	0.28	0.04	2.494	19.98	44.10	0.16	0.86	7.75	0.999	7.82	0.22	0.03	34.39	0.04	0.00	0.61	0.02	67.9	58.7
TDS-14-15	MgCl <sub>2</sub>	16.78	14.90	18.89	MgSO <sub>4</sub>	5.32	4.73	5.99	0.28	0.04	2.494	22.27	38.04	5.48	0.86	7.75	0.884	7.93	0.22	0.03	29.53	1.36	0.00	0.60	0.02	69.5	57.5
TDS-14-15	MgCl <sub>2</sub>	14.05	13.13	15.04	MgSO <sub>4</sub>	11.10	10.37	11.88	0.28	0.04	2.494	25.32	32.58	11.26	0.86	7.70	0.785	8.18	0.22	0.03	25.11	2.74	0.00	0.60	0.03	72.8	58.0
TDS-14-15	MgCl <sub>2</sub>	9.40	8.67	10.21	MgSO <sub>4</sub>	14.87	13.71	16.15	0.28	0.04	2.494	24.44	23.28	15.03	0.86	7.75	0.742	7.60	0.22	0.03	18.05	3.79	0.00	0.61	0.02	66.4	51.2
TDS-14-15	MgCl <sub>2</sub>	6.61	5.87	7.43	MgSO <sub>4</sub>	20.94	18.61	23.56	0.28	0.04	2.494	27.72	17.70	21.10	0.86	7.75	0.669	7.90	0.22	0.03	13.61	5.18	0.00	0.60	0.02	70.2	52.7
TDS-14-15	MgCl <sub>2</sub>	3.59	3.36	3.85	MgSO <sub>4</sub>	28.37	26.48	30.38	0.28	0.04	2.494	32.13	11.66	28.53	0.86	7.80	0.601	8.34	0.21	0.03	8.88	6.77	0.00	0.59	0.02	76.0	53.5
TDS-14-15	MgCl <sub>2</sub>	0.00	0.00	0.00	MgSO <sub>4</sub>	33.09	29.96	37.03	0.28	0.04	2.494	33.26	4.48	33.25	0.86	7.80	0.566	8.22	0.21	0.03	3.41	7.91	0.00	0.59	0.02	74.7	51.3

#### MIXTURES OF TWO CALCIUM SALTS

TDS-14-06	CaCl <sub>2</sub>	9.90	9.01	10.87	CaSO <sub>4</sub>	14.69	0.00	0.00	0.28	0.04	24.95	0.17	20.02	14.85	0.86	7.85	7.70	0.05	0.22	0.03	15.83	3.61	0.00	0.59	0.02	61.2	46.4
TDS-14-06	CaCl <sub>2</sub>	10.31	9.42	11.28	CaSO <sub>4</sub>	14.69	0.00	0.00	0.28	0.04	25.36	0.17	20.84	14.85	0.86	7.90	7.81	0.05	0.22	0.03	16.45	3.58	0.00	0.58	0.02	62.4	47.4
TDS-14-06	CaCl <sub>2</sub>	11.41	10.68	12.19	CaSO <sub>4</sub>	11.75	0.00	0.00	0.28	0.04	23.52	0.17	23.04	1													

TDS-14-04	NaHCO <sub>3</sub>	21.71	19.39	24.30	MgCO <sub>3</sub>	1.94	1.73	2.17	21.99	0.04	0.218	2.11	0.22	0.16	26.45	9.35	0.047	0.62	18.10	0.03	0.18	0.07	1.54	14.71	0.01	51.2	39.9
TDS-14-04	NaHCO <sub>3</sub>	27.29	25.53	29.17	MgCO <sub>3</sub>	6.06	5.67	6.48	27.57	0.04	0.237	6.23	0.22	0.16	40.27	9.35	0.041	1.52	21.91	0.03	0.18	0.06	2.05	19.58	0.02	74.7	48.4
TDS-14-04	NaHCO <sub>3</sub>	21.65	19.87	23.59	MgCO <sub>3</sub>	9.63	8.84	10.49	21.93	0.04	0.406	9.80	0.22	0.16	41.77	9.35	0.072	2.42	17.45	0.03	0.18	0.06	1.97	18.81	0.02	74.3	48.4
TDS-14-04	NaHCO <sub>3</sub>	12.92	11.71	14.29	MgCO <sub>3</sub>	11.51	10.44	12.73	13.20	0.04	0.415	11.68	0.22	0.16	36.80	9.35	0.082	3.15	10.66	0.03	0.18	0.06	1.67	15.95	0.02	62.5	37.0
TDS-14-04	NaHCO <sub>3</sub>	5.11	4.79	5.46	MgCO <sub>3</sub>	11.35	10.63	12.11	5.39	0.04	0.414	11.52	0.22	0.16	28.67	9.20	0.107	3.78	4.46	0.03	0.18	0.06	1.04	14.05	0.02	46.4	25.5
TDS-14-04	NaHCO <sub>3</sub>	0.00	0.00	0.00	MgCO <sub>3</sub>	10.96	9.63	11.97	0.28	0.04	0.412	11.13	0.22	0.16	22.78	9.20	0.121	4.06	0.24	0.03	0.18	0.06	0.83	11.14	0.02	35.0	17.1
TDS-14-11	NaCl	31.61	29.33	34.07	MgSO <sub>4</sub>	0.00	0.00	0.00	31.89	0.04	0.364	0.17	31.83	0.16	0.86	7.95	0.175	0.08	26.60	0.03	26.54	0.07	0.00	0.70	0.02	65.3	61.6
TDS-14-11	NaCl	39.57	36.13	43.33	MgSO <sub>4</sub>	1.97	1.80	2.16	39.85	0.04	0.364	2.14	39.79	2.13	0.86	7.95	0.147	0.86	32.24	0.03	32.22	0.82	0.00	0.67	0.02	85.2	78.5
TDS-14-11	NaCl	35.71	33.44	38.13	MgSO <sub>4</sub>	3.56	3.34	3.80	35.99	0.04	0.364	3.73	35.93	3.72	0.86	7.90	0.140	1.44	29.02	0.03	29.02	1.39	0.00	0.67	0.02	80.6	73.9
TDS-14-11	NaCl	35.11	31.25	39.84	MgSO <sub>4</sub>	8.72	7.76	9.90	35.39	0.04	0.364	8.89	35.33	8.88	0.86	7.90	0.117	2.95	27.81	0.03	27.87	2.86	0.00	0.64	0.02	89.7	79.3
TDS-14-11	NaCl	23.81	20.59	27.93	MgSO <sub>4</sub>	11.85	10.25	13.90	24.09	0.04	0.364	12.02	24.03	12.01	0.86	7.90	0.112	3.87	18.97	0.03	19.02	3.78	0.00	0.64	0.02	73.4	62.5
TDS-14-11	NaCl	13.99	12.10	16.14	MgSO <sub>4</sub>	13.94	12.06	16.09	14.27	0.04	0.364	14.11	14.21	14.10	0.86	7.90	0.110	4.50	11.30	0.03	11.32	4.43	0.00	0.64	0.02	57.9	47.2
TDS-14-11	NaCl	6.86	6.24	7.52	MgSO <sub>4</sub>	17.04	15.50	18.68	7.14	0.04	0.364	17.21	7.08	17.20	0.86	7.95	0.104	5.29	5.64	0.03	5.63	5.23	0.00	0.63	0.02	49.9	37.9
TDS-14-11	NaCl	0.00	0.00	0.00	MgSO <sub>4</sub>	15.98	14.11	18.54	0.28	0.04	0.364	16.15	0.22	16.14	0.86	7.90	0.109	5.22	0.23	0.03	0.17	5.18	0.00	0.64	0.02	34.0	24.0
TDS-14-12	NaCl	34.15	31.92	36.53	MgCO <sub>3</sub>	0.00	0.00	0.00	34.43	0.04	0.364	0.17	34.37	0.16	0.86	7.90	0.171	0.08	28.56	0.03	28.51	0.07	0.00	0.70	0.02	70.4	66.3
TDS-14-12	NaCl	33.99	31.49	36.62	MgCO <sub>3</sub>	1.08	1.00	1.17	34.27	0.04	0.369	1.25	34.21	0.16	3.02	8.45	0.165	0.55	28.26	0.03	28.18	0.07	0.03	2.30	0.02	73.3	67.7
TDS-14-12	NaCl	35.64	33.40	38.02	MgCO <sub>3</sub>	2.27	2.13	2.43	35.92	0.04	0.374	2.44	35.86	0.16	5.40	8.70	0.154	1.02	29.32	0.03	29.24	0.06	0.09	3.80	0.02	80.2	72.4
TDS-14-12	NaCl	31.19	28.95	33.63	MgCO <sub>3</sub>	4.96	4.60	5.35	31.47	0.04	0.386	5.13	31.41	0.16	10.78	8.95	0.138	1.97	25.53	0.03	25.47	0.06	0.28	6.58	0.02	79.4	67.8
TDS-14-12	NaCl	28.67	26.75	30.72	MgCO <sub>3</sub>	9.13	8.52	9.78	28.95	0.04	0.404	9.30	28.89	0.16	19.12	9.10	0.118	3.11	23.13	0.03	23.13	0.05	0.58	9.87	0.02	86.9	68.1
TDS-14-12	NaCl	19.71	17.63	22.41	MgCO <sub>3</sub>	12.57	11.25	14.29	19.99	0.04	0.419	12.74	19.93	0.16	26.00	9.20	0.108	3.95	15.98	0.03	16.01	0.05	0.88	11.87	0.02	79.3	55.5
TDS-14-12	NaCl	6.65	6.05	7.32	MgCO <sub>3</sub>	10.56	9.61	11.63	6.93	0.04	0.410	10.73	6.87	0.16	21.98	9.20	0.119	3.79	5.74	0.03	5.70	0.06	0.79	10.68	0.02	47.1	29.0
TDS-14-12	NaCl	0.00	0.00	0.00	MgCO <sub>3</sub>	10.06	9.34	10.85	0.28	0.04	0.408	10.23	0.22	0.16	20.98	9.20	0.125	3.86	0.24	0.03	0.18	0.06	0.78	10.46	0.01	32.3	16.0
TDS-14-05	NaCl	36.85	34.42	39.45	MgCl <sub>2</sub>	0.00	0.00	0.00	37.13	0.04	2.494	0.17	41.33	0.16	0.86	7.90	1.103	0.07	30.30	0.03	33.68	0.06	0.00	0.67	0.02	82.2	76.7
TDS-14-05	NaCl	35.81	33.47	38.31	MgCl <sub>2</sub>	1.63	1.53	1.75	36.09	0.04	2.494	1.80	43.55	0.16	0.86	7.90	1.079	0.76	29.28	0.03	35.23	0.06	0.00	0.66	0.02	85.0	78.9
TDS-14-05	NaCl	34.45	31.58	37.59	MgCl <sub>2</sub>	3.91	3.58	4.27	34.73	0.04	2.494	4.08	46.75	0.16	0.86	7.90	1.048	1.67	27.95	0.03	37.44	0.05	0.00	0.65	0.02	89.1	82.0
TDS-14-05	NaCl	32.99	29.94	36.46	MgCl <sub>2</sub>	7.50	6.81	8.29	33.27	0.04	2.494	7.67	52.47	0.16	0.86	7.85	1.002	3.00	26.46	0.03	41.40	0.05	0.00	0.63	0.02	97.0	88.3
TDS-14-05	NaCl	28.97	27.28	30.77	MgCl <sub>2</sub>	13.19	12.42	14.01	29.25	0.04	2.494	13.36	59.83	0.16	0.86	7.80	0.94										

TDS-13-34	NaCl	43.82	40.91	46.93	CaCl <sub>2</sub>	4.68	4.37	5.01	44.10	0.04	5.04	0.17	53.40	0.16	0.86	7.90	2.05	0.07	35.19	0.03	42.52	0.05	0.00	0.64	0.02	103.8	95.9
TDS-13-34	NaCl	38.74	35.18	42.66	CaCl <sub>2</sub>	10.30	9.36	11.34	39.02	0.04	10.66	0.17	59.56	0.16	0.86	7.85	4.12	0.06	30.71	0.03	46.69	0.04	0.00	0.62	0.02	110.5	100.6
TDS-13-34	NaCl	26.87	25.11	28.75	CaCl <sub>2</sub>	14.31	13.38	15.32	27.15	0.04	14.67	0.17	55.71	0.16	0.86	7.85	5.69	0.06	21.39	0.03	43.66	0.04	0.00	0.60	0.02	98.8	89.0
TDS-13-34	NaCl	15.31	13.82	16.95	CaCl <sub>2</sub>	16.33	14.75	18.09	15.59	0.04	16.69	0.17	48.19	0.16	0.86	7.85	6.67	0.07	12.38	0.03	38.03	0.04	0.00	0.59	0.02	81.7	72.8
TDS-13-34	NaCl	7.00	6.56	7.46	CaCl <sub>2</sub>	18.60	17.44	19.83	7.28	0.04	18.96	0.17	44.42	0.16	0.86	7.85	7.65	0.07	5.80	0.03	35.12	0.04	0.00	0.59	0.02	71.9	63.4
TDS-13-34	NaCl	0.00	0.00	0.00	CaCl <sub>2</sub>	19.55	17.70	21.58	0.28	0.04	19.91	0.17	39.32	0.16	0.86	7.80	8.23	0.07	0.23	0.03	31.26	0.04	0.00	0.59	0.02	60.7	53.0
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	20.24	18.45	22.19	CaCl <sub>2</sub>	0.00	0.00	0.00	40.76	0.04	0.364	0.17	0.22	20.40	0.86	8.10	0.088	0.04	31.69	0.03	0.17	8.02	0.00	0.67	0.01	62.8	54.0
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	28.55	25.51	31.60	CaCl <sub>2</sub>	4.18	3.74	4.63	57.38	0.04	4.54	0.17	8.58	28.71	0.86	7.95	0.969	0.04	42.98	0.03	6.64	9.26	0.00	0.64	0.02	100.3	84.4
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	28.22	25.63	31.08	CaCl <sub>2</sub>	10.30	9.36	11.34	56.72	0.04	10.66	0.17	20.82	28.38	0.86	7.95	2.35	0.04	42.30	0.03	15.96	8.16	0.00	0.61	0.02	117.6	98.3
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	20.52	18.61	22.70	CaCl <sub>2</sub>	15.01	13.61	16.60	41.32	0.04	15.37	0.17	30.24	20.68	0.86	7.95	3.92	0.05	31.38	0.03	23.37	5.63	0.00	0.60	0.02	108.7	91.1
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	11.97	10.82	13.24	CaCl <sub>2</sub>	17.53	15.85	19.40	24.22	0.04	17.89	0.17	35.28	12.13	0.86	7.90	5.48	0.05	18.82	0.03	27.61	3.17	0.00	0.60	0.02	90.6	76.6
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	5.08	4.64	5.57	CaCl <sub>2</sub>	18.54	16.93	20.31	10.44	0.04	18.90	0.17	37.30	5.24	0.86	7.90	6.87	0.06	8.27	0.03	29.51	1.32	0.00	0.59	0.02	72.9	62.3
TDS-14-01	Na <sub>2</sub> SO <sub>4</sub>	0.00	0.00	0.00	CaCl <sub>2</sub>	17.45	16.30	18.68	0.28	0.04	17.81	0.17	35.12	0.16	0.86	7.90	7.61	0.07	0.23	0.03	28.18	0.04	0.00	0.59	0.02	54.4	47.6
TDS-14-09	NaCl	39.14	35.98	42.74	CaSO <sub>4</sub>	14.69	0.00	0.00	39.42	0.04	15.05	0.17	39.36	14.85	0.86	7.90	4.25	0.05	30.21	0.03	30.50	4.00	0.00	0.60	0.02	109.7	94.0
TDS-14-09	NaCl	44.93	41.92	48.15	CaSO <sub>4</sub>	11.02	0.00	0.00	45.21	0.04	11.38	0.17	45.15	11.18	0.86	7.90	3.41	0.05	34.85	0.03	35.10	3.17	0.00	0.61	0.02	114.0	100.0
TDS-14-09	NaCl	47.72	42.88	53.10	CaSO <sub>4</sub>	7.34	0.00	0.00	48.00	0.04	7.70	0.17	47.94	7.50	0.86	7.90	2.50	0.06	37.38	0.03	37.57	2.29	0.00	0.63	0.02	112.2	97.9
TDS-14-09	NaCl	47.71	42.88	53.09	CaSO <sub>4</sub>	3.67	0.00	0.00	47.99	0.04	4.03	0.17	47.93	3.83	0.86	7.95	1.464	0.06	37.99	0.03	38.07	1.31	0.00	0.65	0.02	104.8	93.3
TDS-14-09	NaCl	40.33	36.66	44.37	CaSO <sub>4</sub>	1.47	0.00	0.00	40.61	0.04	1.834	0.17	40.55	1.63	0.86	7.90	0.758	0.07	32.93	0.03	32.93	0.63	0.00	0.67	0.02	85.7	79.7
TDS-14-09	NaCl	36.35	34.22	38.61	CaSO <sub>4</sub>	0.73	0.00	0.00	36.63	0.04	1.094	0.17	36.57	0.89	0.86	7.95	0.483	0.07	30.07	0.03	30.04	0.37	0.00	0.68	0.02	76.2	71.4
TDS-14-09	NaCl	33.22	30.33	36.50	CaSO <sub>4</sub>	0.00	0.00	0.00	33.50	0.04	0.364	0.17	33.44	0.16	0.86	8.00	0.173	0.08	27.85	0.03	27.79	0.07	0.00	0.70	0.02	68.5	64.6

#### MIXTURES OF MAGNESIUM AND CALCIUM SALTS

TDS-13-36	MgCl <sub>2</sub>	12.25	11.19	13.43	CaCl <sub>2</sub>	0.00	0.00	0.00	0.28	0.04	0.364	12.42	24.72	0.16	0.86	8.10	0.172	5.78	0.23	0.03	20.23	0.05	0.00	0.63	0.01	38.8	34.3
TDS-13-36	MgCl <sub>2</sub>	16.66	14.28	20.27	CaCl <sub>2</sub>	3.21	2.75	3.91	0.28	0.04	3.57	16.83	39.96	0.16	0.86	8.10	1.473	6.79	0.23	0.03	31.46	0.04	0.00	0.58	0.01	61.7	53.5
TDS-13-36	MgCl <sub>2</sub>	16.58	14.13	20.62	CaCl <sub>2</sub>	6.40	5.45	7.96	0.28	0.04	6.76	16.75	46.18	0.16	0.86	7.95	2.67	6.45	0.22	0.03	35.93	0.04	0.00	0.58	0.01	71.0	61.3
TDS-13-36	MgCl <sub>2</sub>	12.00	10.76	13.38	CaCl <sub>2</sub>	11.53	10.33	12.86	0.28	0.04	11.89	12.17	47.28	0.16	0.86	7.95	4.66	4.65	0.22	0.03	36.80	0.04	0.00	0.57	0.01	72.7	62.7
TDS-13-36	MgCl <sub>2</sub>	7.05	6.44	7.69	CaCl <sub>2</sub>	13.56	12.40	14.79	0.2																		

TDS-14-03	NaCl	36.12	32.88	39.57	KCl	2.58	2.35	2.82	36.40	2.62	0.364	0.17	38.92	0.16	0.86	7.90	0.166	0.07	29.92	2.15	31.99	0.07	0.00	0.69	0.02	79.5	74.7
TDS-14-03	NaCl	30.57	28.57	32.70	KCl	4.37	4.08	4.67	30.85	4.41	0.364	0.17	35.16	0.16	0.86	7.95	0.170	0.08	25.55	3.65	29.11	0.07	0.00	0.70	0.02	72.0	67.8
TDS-14-03	NaCl	25.87	24.00	27.88	KCl	7.40	6.87	7.98	26.15	7.44	0.364	0.17	33.49	0.16	0.86	7.90	0.173	0.08	21.73	6.18	27.83	0.07	0.00	0.70	0.02	68.6	64.7
TDS-14-03	NaCl	19.29	17.42	22.51	KCl	13.75	12.41	16.05	19.57	13.79	0.364	0.17	33.26	0.16	0.86	7.90	0.173	0.08	16.27	11.47	27.65	0.07	0.00	0.70	0.02	68.2	64.2
TDS-14-03	NaCl	0.00	0.00	0.00	KCl	4.39	3.99	4.84	0.28	4.43	0.364	0.17	4.61	0.16	0.86	8.00	0.250	0.12	0.26	4.06	4.22	0.10	0.00	0.77	0.02	10.9	10.5
TDS-14-20	KCl	4.81	4.40	5.23	MgCl <sub>2</sub>	0.00	0.00	0.00	0.28	4.85	0.364	0.17	5.03	0.16	0.86	7.95	0.248	0.11	0.26	4.43	4.59	0.10	0.00	0.77	0.02	11.7	11.3
TDS-14-20	KCl	5.35	4.91	5.84	MgCl <sub>2</sub>	2.16	1.98	2.36	0.28	5.39	0.364	2.33	9.89	0.16	0.86	7.95	0.219	1.40	0.25	4.77	8.71	0.08	0.00	0.73	0.02	19.3	18.2
TDS-14-20	KCl	4.98	4.55	5.46	MgCl <sub>2</sub>	5.01	4.57	5.49	0.28	5.02	0.364	5.18	15.22	0.16	0.86	7.90	0.198	2.79	0.24	4.32	13.01	0.07	0.00	0.70	0.02	27.1	25.0
TDS-14-20	KCl	5.61	4.94	6.38	MgCl <sub>2</sub>	11.30	9.94	12.85	0.28	5.65	0.364	11.47	28.43	0.16	0.86	7.85	0.168	5.21	0.23	4.66	23.16	0.05	0.00	0.65	0.02	47.2	43.2
TDS-14-20	KCl	3.35	3.00	3.77	MgCl <sub>2</sub>	13.52	12.09	15.22	0.28	3.39	0.364	13.69	30.61	0.16	0.86	7.85	0.164	6.05	0.23	2.78	24.71	0.05	0.00	0.64	0.02	49.3	43.7
TDS-14-20	KCl	1.23	1.15	1.32	MgCl <sub>2</sub>	12.34	11.52	13.21	0.28	1.27	0.364	12.51	26.13	0.16	0.86	7.85	0.170	5.75	0.23	1.05	21.32	0.05	0.00	0.65	0.02	41.6	36.8
TDS-14-20	KCl	0.00	0.00	0.00	MgCl <sub>2</sub>	11.02	9.82	12.36	0.28	0.04	0.364	11.19	22.26	0.16	0.86	7.85	0.177	5.36	0.24	0.03	18.36	0.05	0.00	0.66	0.02	35.1	31.2
TDS-14-17	KCl	4.39	4.11	4.69	CaCl <sub>2</sub>	0.00	0.00	0.00	0.28	4.43	0.364	0.17	4.61	0.16	0.86	7.90	0.250	0.12	0.26	4.06	4.22	0.10	0.00	0.77	0.02	10.9	10.5
TDS-14-17	KCl	4.96	4.64	5.31	CaCl <sub>2</sub>	1.85	1.73	1.98	0.28	5.00	2.214	0.17	8.88	0.16	0.86	7.85	1.360	0.10	0.25	4.45	7.88	0.08	0.00	0.74	0.02	17.6	16.6
TDS-14-17	KCl	5.47	4.94	6.06	CaCl <sub>2</sub>	4.09	3.69	4.53	0.28	5.51	4.45	0.17	13.87	0.16	0.86	7.80	2.49	0.09	0.24	4.78	11.99	0.07	0.00	0.70	0.03	25.3	23.5
TDS-14-17	KCl	5.54	4.95	6.19	CaCl <sub>2</sub>	10.30	9.21	11.52	0.28	5.58	10.66	0.17	26.36	0.16	0.86	7.75	5.02	0.08	0.23	4.63	21.75	0.05	0.00	0.65	0.03	44.1	39.7
TDS-14-17	KCl	4.99	4.69	5.30	CaCl <sub>2</sub>	18.59	17.50	19.74	0.28	5.03	18.95	0.17	42.39	0.16	0.86	7.75	7.73	0.07	0.23	4.02	33.60	0.04	0.00	0.60	0.02	67.8	59.7
TDS-14-17	KCl	2.45	2.29	2.62	CaCl <sub>2</sub>	18.29	17.09	19.58	0.28	2.49	18.65	0.17	39.25	0.16	0.86	7.70	7.75	0.07	0.23	2.00	31.26	0.04	0.00	0.60	0.03	61.9	54.3
TDS-14-17	KCl	1.00	0.94	1.07	CaCl <sub>2</sub>	18.60	17.44	19.83	0.28	1.04	18.96	0.17	38.42	0.16	0.86	7.75	7.91	0.07	0.23	0.83	30.62	0.04	0.00	0.60	0.02	59.9	52.4
TDS-14-17	KCl	0.00	0.00	0.00	CaCl <sub>2</sub>	18.31	16.81	19.86	0.28	0.04	18.67	0.17	36.84	0.16	0.86	7.75	7.87	0.07	0.23	0.03	29.44	0.04	0.00	0.60	0.02	57.0	49.8

#### MIXTURES OF MANNITOL AND CATION CHLORIDES

TDS-14-26	NaCl	32.22	30.34	34.22	Mannitol	0.00	0.00	0.00	32.50	0.04	0.364	0.17	32.44	0.16	0.86	7.85	0.174	0.08	27.07	0.03	27.02	0.07	0.00	0.70	0.02	66.5	62.7
TDS-14-26	NaCl	29.85	27.89	31.94	Mannitol	12.56	11.74	13.44	30.13	0.04	0.364	0.17	30.07	0.16	0.86	7.70	0.178	0.08	25.23	0.03	25.18	0.07	0.00	0.71	0.03	74.3	70.9
TDS-14-26	NaCl	25.27	22.72	28.11	Mannitol	26.48	23.81	29.45	25.55	0.04	0.364	0.17	25.49	0.16	0.86	7.75	0.185	0.08	21.64	0.03	21.58	0.07	0.00	0.72	0.03	79.1	76.3
TDS-14-26	NaCl	19.79	17.79	22.02	Mannitol	41.53	37.34	46.22	20.07	0.04	0.364	0.17	20.01	0.16	0.86	7.75	0.196	0.09	17.25	0.03	17.19	0.08	0.00	0.73	0.03	83.2	81.2
TDS-14-26	NaCl	16.11	14.54	17.81	Mannitol	67.72	61.11	74.86	16.39	0.04	0.364	0.17	16.33	0.16	0.86	7.75	0.205	0.09	14.25	0.03	14.19	0.08	0.00	0.74	0.03	102.0	99.6
TDS-14-26	NaCl	6.60	5.97	7.19	Mannitol	69.12	62.49	75.30	6.88																		