COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium metaborate; $NaBO_2$; [7775-19-1]	Nies, N.P.; Hulbert, R.W.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Chem. Eng. Data* 1969, *14*, 14-6.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition	Hiroshi Miyamoto
T/K = 254 to 371 K	

EXPERIMENTAL VALUES:

Composition of saturated solutions

t/°C	$NaBO_2$ mass %	$NaBO_2$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Nature of the solid phase[c]
-19.3	5.01	2.03	34.73	8.707	Ice+A+C
- 5	13.2[a]	3.997	0.00	0.00	A
	9.99	3.31	12.08	2.471	"
	7.57	2.80	24.61	5.624	"
	5.72	2.42	37.36	9.757	A+C
	0.00	0.00	43.03[d]	11.33	C
0	14.5	4.44	0.00	0.00	A
	10.92	3.632	11.74	2.414	"
	8.37	3.087	23.70	5.404	"
	6.12	2.618	37.98	10.04	A+C
	1.12	0.484	43.12	11.52	C
	0.00	0.000	44.23[d]	11.83	"
10	0.00	0.000	46.63[d]	12.88	C
20	20.0	6.41	0.00	0.00	A
	16.46	5.604	9.18	1.93	"
	13.02	4.847	20.47	4.711	"
	9.06	4.112	39.83	11.17	A+C
	0.00	0.000	48.86[d]	13.92	C

continued....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Solutions of about 200g containing $NaBO_2$ and $NaClO_3$ were prepd in polypropylene bottles, brought to the operating temp, usually seeded with about 50 g of the solid phases desired, and agitated for several hours to several days in a water or brine bath.

At least three samples from each mixture were analyzed, and the averages are shown in the table and the figure. In some experiments the solid phases were detd by X-ray diffraction.

Na_2O and B_2O_3 were detd by titrn with 0.5 mol dm^{-3} HCl using methyl red followed by addition of mannitol and titration to phenolphthalain with 0.5 mol dm^{-3} NaOH which had been standardized against recrystd dry boric acid.

$NaBO_3$ mass % calcd from the percent of B_2O_3.

Chlorate was detd either by boiling with SO_2 followed by analysis of the resulting chloride by the Volhard method, or by addition of excess $FeSO_4$ with H_2SO_4, boiling, and back-titrating with $Na_2Cr_2O_7$ using barium diphenylamine sulfonate indicator. The $FeSO_4$ solution was standardized with $K_2Cr_2O_7$ in the presence of H_3PO_4.

SOURCE AND PURITY OF MATERIALS:

Photographic grade sodium metaborate dihydrate and tetrahydrate (United States Borax & Chem. Corp.) were used. The results of typical analysis were given in the following: 0.007 and 0.002 % SO_4, 0.05 and 0.04 % Cl, 0.003 and 0.002 % Ca, 1 and 1.5 ppm Fe, respectively, and 10 ppm Al. Reagent grade $NaClO_3$ (J.T. Baker Chem Co) was used, assay 100.0 %, analysis 0.01 % BrO_3 and 0.003 % or less Ca, Mg and NH_4OH precipitate, Cl, N, SO_4 and Fe. Distilled water was used.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: precision ± 0.1 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium metaborate; $NaBO_2$; [7775-19-1]	Nies, N.P.; Hulbert, R.W.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Chem. Eng. Data* 1969, *14*, 14-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaBO_2$ mass %	$NaBO_2$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Nature of the solid phase[c]
30	23.6	7.80	0.00	0.00	A
	18.77	6.746	12.26	2.724	"
	14.78	5.931	25.33	6.284	"
	12.02	5.567	38.70	11.08	A+C
	5.76	2.707	45.22	13.14	C
	0.00	0.000	51.10[d]	15.03	"
40	27.9	9.58	0.00	0.00	-
	22.97	8.610	12.37	2.866	A
	19.09	8.004	25.08	6.500	"
	16.90	8.042	36.34	10.69	A+C[b]
	7.64	3.71	45.79	13.74	C
	0.00	0.00	53.5[a,d]	16.30	"
41.6	18.43	8.747	34.82	10.22	A+B+C
45	30.8[a]	10.86	0.00	0.00	A
	26.62	10.10	10.24	2.402	"
	24.12	9.750	17.76	4.438	"
	21.81	9.791	27.89	7.739	A+B[b]
	21.04	9.576	29.57	8.320	B
	18.44	8.900	35.97	10.73	"
	8.56	4.216	45.97	14.00	C
	0.00	0.00	54.5[d]	16.86	"

continued.....

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium metaborate; $NaBO_2$; [7775-19-1]	Nies, N.P.; Hulbert, R.W.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Chem. Eng. Data* 1969, *14*, 14-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaBO_2$ mass %	$NaBO_2$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Nature of the solid phase[c]
50	34.1	12.41	0.00	0.00	A
	30.04	11.92	11.06	2.713	"[b]
	29.65	11.99	12.97	3.243	A+B[b]
	29.18	11.86	13.79	3.465	B[b]
	25.22	10.86	21.76	5.790	"
	23.99	10.55	24.45	6.646	B
	18.67	9.172	36.97	11.23	B+C
	9.78	4.89	45.87	14.17	C
	0.00	0.00	55.6[a,d]	17.49	"
60	38.3	14.53	0.00	0.00	-
	29.58	12.52	16.65	4.356	B
	19.74	10.03	38.28	12.03	B+C
	11.07	5.704	46.74	14.89	C
	0.00	0.00	57.82[d]	18.83	"
75	42.2	16.7	0.00	0.00	B
	33.90	14.74	14.93	4.012	"
	26.56	13.01	29.86	9.040	"
	22.99	12.30	38.66	12.79	B+C
	10.03	5.510	51.61	17.53	C
	0.00	0.00	61.15[d]	21.04	"
98	0.00	0.00	66.28[d]	24.96	C

[a] Interpolated; [b] Identified by X-ray diffraction

[c] A = $Na_2O.B_2O_3.8H_2O$ or $NaBO_2.4H_2O$; B = $Na_2O.B_2O_3.4H_2O$; C = $NaClO_3$

C = $NaClO_3$

[d] For the binary system the compiler computes the following:

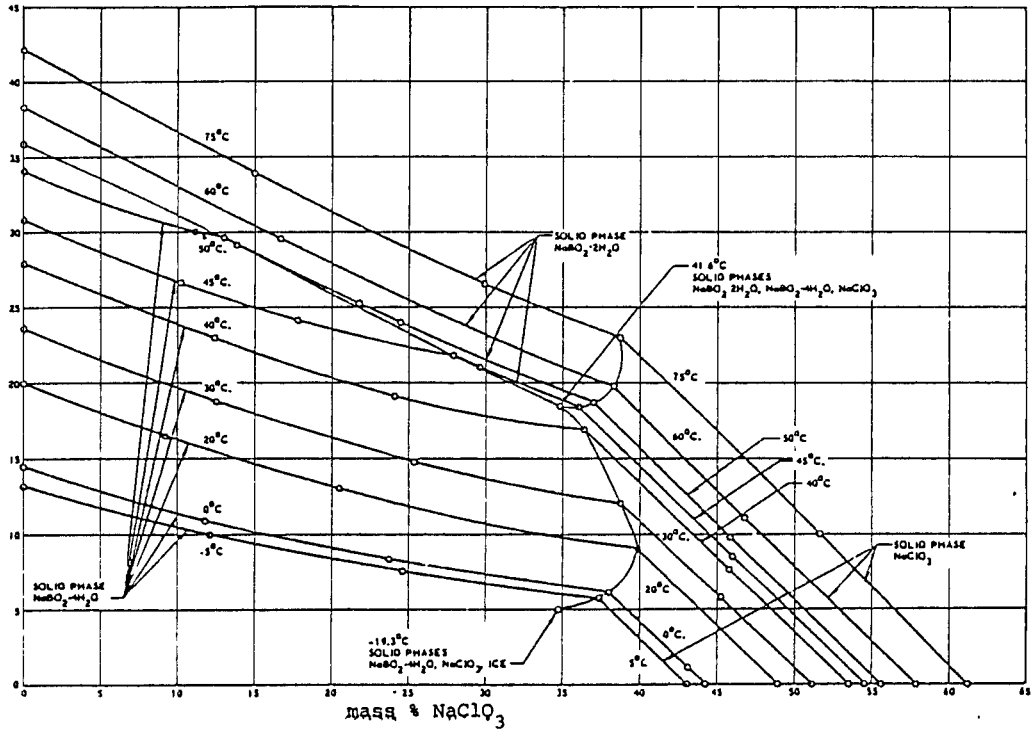
t/°C	soly $NaClO_3$/mol kg^{-1}	t/°C	soly $NaClO_3$/mol kg^{-1}
-5	7.096	45	11.25
0	7.451	50	11.76
10	8.208	60	12.88
20	8.976	75	14.79
30	9.818	98	18.47
40	10.81		

continued.....

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium metaborate; $NaBO_2$; [7775-19-1]	Nies, N.P.; Hulbert, R.W.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Chem. Eng. Data* 1969, *14*, 14-6.
(3) Water; H_2O; [7732-18-5]	

COMMENTS AND/OR ADDITIONAL DATA: (Continued)

Solubility isotherms in the $NaBO_2$ - $NaClO_3$ - H_2O systems at -5° to 75°C are given below:



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium nitrate; $NaNO_3$; [7631-99-4] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Ricci, J.E. *J. Am. Chem. Soc.* 1944, *66*, 1015-6.
VARIABLES:	**PREPARED BY:**
Composition at 298.15 K	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	$NaNO_3$ mass %	$NaNO_3$ mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
50.10[b]	14.52	0	0	1.432	A
43.98	13.25	9.26	3.49	1.481	"
38.82	12.17	17.47	6.859	1.517	"
35.72	11.52	22.65	9.149	1.528	"
34.28[c]	11.36	25.96	10.78	1.549	A+B
34.29	11.37	25.95	10.77	1.557	"
34.28	11.35	25.90	10.74	1.552	"
34.28	11.35	25.91	10.75	-	"
34.28	11.36	25.96	10.78	1.554	"
(Av) 34.28	11.36	25.94	10.76	1.553	"
32.15	10.47	27.08	11.05	1.548	B
27.34	8.590	29.72	11.69	1.505	"
20.96	6.353	33.94	12.88	1.468	"
13.85	4.040	38.66	14.12	1.440	"
6.93	1.95	43.27	15.25	-	"
0	0	47.87	16.29	1.389	"

[a] A = $NaClO_3$; B = $NaNO_3$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 9.433 mol kg^{-1}.

[c] Isothermally invariant solution saturated with two salts.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Complexes were stirred for at least two days at 25°C. Equilibrium was established in several instances by constancy of composition upon repeated analysis. The analysis of the saturated aqueous sln involved argentometric titration of the chloride with eosin as absorption indicator, determination of water in a separate sample by evaporation, and calculation of the sodium chlorate by difference. A few of the chloride determinations for the isothermally invariant points were verified by the Volhard method. The solubilities of the individual salts were determined both volumetrically and by evaporation, with very close agreement between the two methods.	C.p. grade $NaClO_3$ and $NaNO_3$ were used without further purification.
	ESTIMATED ERROR: Soly: nothing specified. Temp: precision ± 0.05 K.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Babaeva, A.V. *Zh. Obshch. Khim.* 1936, *6*, 1144-6.
VARIABLES:	**PREPARED BY:**
Composition at 273, 293 and 313 K	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	Sodium Sulfate mass %	Sodium Sulfate mol % (compiler)	Sodium Chlorate mass %	Sodium Chlorate mol % (compiler)	Nature of the solid phase[a]
0	4.82	0.638	-	-	A
	1.65	0.243	14.77	2.897	"
	1.28	0.196	19.23	3.926	"
	0.97	0.16	29.45	6.674	"
	0.36	0.072	43.96	11.78	A+C
	-	-	45.01[b]	12.17	C
20	16.25	2.402	-	-	A
	13.05	1.980	6.01	1.22	"
	9.40	1.53	16.45	3.564	"
	8.29	1.50	27.34	6.606	"
	6.30	1.20	33.81	8.617	"
	5.75	1.15	38.10	10.18	A+C
	4.72	0.988	42.46	11.86	C
	2.41	0.518	46.86	13.45	"
	-	-	49.70[b]	14.33	"
40	32.50	5.755	-	-	B
	24.30	4.273	8.01	1.88	"
	27.71	4.897	4.86	1.15	"
	19.09	3.446	15.73	3.789	"
	15.25	2.937	25.06	6.440	"
	12.84	2.698	34.23	9.599	".

continued....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The compiler assumes that the isothermal method was used. Equilibrium was reached in 2 to 3.5 hours. The sodium chlorate content was determined volumetrically by addition of iron (II) sulfate solution to the sample solution, and back-titrating the excess Fe(II) with potassium permanganate solution. The solution containing sodium chlorate and sodium sulfate was heated with sulfuric acid and then succesively heated to dryness. The sodium sulfate content was calculated by difference. The composition of the solid phase was identified by microscopy and direct analysis.	"Chemically pure" grade sodium chlorate and sulfate were recrystallized.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6]	Babaeva, A.V.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*Zh. Obshch. Khim.* 1936, *6*, 1144-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	Sodium Sulfate mass %	Sodium Sulfate mol % (compiler)	Sodium Chlorate mass %	Sodium Chlorate mol % (compiler)	Nature of the solid phase[a]
40	11.42	2.632	42.13	12.96	B+C
	7.43	1.71	46.34	14.26	C
	1.70	0.392	52.39	16.12	"
	-	-	56.35[b]	17.93	"

[a] A = $Na_2SO_4.10H_2O$; B = Na_2SO_4; C = $NaClO_3$

[b] For the binary system the compiler computes the following:

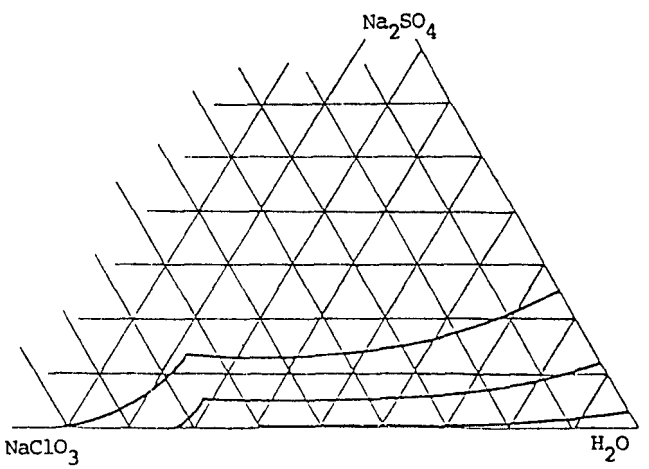
soly of $NaClO_3$ = 7.690 mol kg^{-1} at 0°C

= 9.282 mol kg^{-1} at 20°C

= 12.13 mol kg^{-1} at 40°C

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Ricci, J.E.; Yanick, N.S. *J. Am. Chem. Soc.* 1937, 59, 491-6.
VARIABLES: Composition at 288.2, 298.2, 313.2 and 343.2 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Na_2SO_4 mass %	Na_2SO_4 mol % (compiler)	Density gm^{-3}	Nature of the solid phase[a]
15	0.00	0.00	11.60	1.637	1.106	A
	19.86	4.272	5.52	0.890	1.200	"
	34.75	8.702	4.06	0.762	1.323	"
	36.89	9.499	4.15	0.801	1.348	"
	39.37	10.45	4.02	0.799	1.372	"
	41.16	11.17	3.92	0.797	-	"
	43.07	11.99	3.89	0.811	-	"
	43.67	12.25	3.90	0.820	-	"
	41.14	11.18	4.03	0.820	1.422	A+C
	44.10	12.48	4.09	0.868	1.422	"
	44.12	12.49	4.06	0.861	1.422	"
	35.93	9.750	8.91	1.81	1.393	B(m)
	38.37	10.62	7.98	1.66	1.408	"
	41.77	11.86	6.52	1.39	-	B(m)+C(m)
	41.92	11.90	6.36	1.35	1.424	"
	41.85	11.88	6.44	1.37	1.424	"
	42.66	12.10	5.59	1.19	-	C(m)
	44.34	12.55	3.83	0.812	1.422	"
	45.86	12.94	2.19	0.463	1.423	"
	47.91[b]	13.47	0.00	0.00	1.406	"

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Weighed complexes of known composition were equilibrated by stirrring in a large water bath. The time required for attainment of equilibrium was determined by analysis, and required several weeks. The order of mixing of the components, and the process of seeding or inoculations for required phases had to be varied in accordance with the phase sought.

Chlorate was determined by the method of Peters and Deutshlander (1): to the chlorate sample (containing about 0.11g of ClO_3^-) was added a definite volume (50 cm^3) of 0.05 mol dm^{-3} arsenious oxide solution; after the addition of a trace of KBr, the solution was acidified strongly with HCl and boiled for ten minutes. The excess arsenious oxide was then titrated by means of 0.033 mol dm^{-3} $KBrO_3$ solution using indigo sulfonic acid as an indicator.

SOURCE AND PURITY OF MATERIALS:

Nothing specified.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.02 K.

REFERENCES:

1. Kolthoff, I.M.; Furman, N.H. *Volumetric Analysis Vol 2*, 1929, John Wiely and Sons, New York, p. 465.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6]	Ricci, J.E.; Yanick, N.S.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Am. Chem. Soc.* 1937, 59, 491-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES (Continued)

Composition of saturated solutions

$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Na_2SO_4 mass %	Na_2SO_4 mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
0.00	0.00	21.78	3.411		A
6.58	1.42	18.20	2.935		"
12.30	2.739	15.77	2.631		"
18.05	4.192	13.90	2.419		"
23.45	5.712	12.64	2.307		"
27.36	6.938	12.06	2.292		"
28.92	7.494	12.21	2.371		A+B
28.87	7.459	12.03	2.329		"
(Av)28.90	7.478	12.12	2.350		"
29.29	7.628	12.23	2.387		A(m)
29.52	7.708	12.20	2.387		"
29.90	7.850	12.25	2.410		A(m)+E(m)
29.89	7.849	12.27	2.414		"
29.90	7.851	12.26	2.412		"
0.00	0.000	33.97	6.125		B(m)
6.03	1.46	28.62	5.186		"
17.09	4.227	19.89	3.686		"
28.02	7.209	12.53	2.416		"
32.47	8.531	9.86	1.94		B
38.07	10.38	7.21	1.47		"
42.39	11.94	5.37	1.13		"
44.76	12.88	4.60	0.992		"
46.28	13.50	4.02	0.878		B+E
46.26	13.49	4.02	0.878		"
46.40	13.55	3.99	0.873		"
(Av)46.31	13.51	4.01	0.877		"

AUXILIARY INFORMATION continued.....

METHOD/APPARATUS/PROCEDURE:

The total solid was determined by evaporation to dryness at 100°C followed by heating to 250°C, and the sulfate was then calculated by difference.

For the identification of known solid phases, microscopic examination and algebraic extrapolation of tie-lines sufficed.

The densities reported for some saturated solutions were obtained by means of volumetric pipets calibrated for delivery.

SOURCE AND PURITY OF MATERIALS:

ESTIMATED ERROR:

REFERENCES:

COMPONENTS:

(1) Sodium sulfate; Na_2SO_4; [7757-82-6]

(2) Sodium chlorate; $NaClO_3$; [7775-09-9]

(3) Water; H_2O; [7732-18-5]

ORIGINAL MEASUREMENTS:

Ricci, J.E.; Yanick, N.S.

J. Am. Chem. Soc. 1937, 59, 491-6.

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Na_2SO_4 mass %	Na_2SO_4 mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
25	25.26	6.548	15.72	3.054		E(m)
	27.00	7.062	14.73	2.887		"
	30.80	8.142	11.90	2.358		"
	31.65	8.397	11.35	2.257		"
	32.71	8.715	10.65	2.126		"
	33.85	9.064	9.93	1.993		"
	34.36	9.221	9.61	1.933		"
	36.08	9.762	8.56	1.736		"
	37.31	10.17	7.91	1.62		"
	39.75	11.01	6.70	1.39		"
	41.19	11.51	5.99	1.25		"
	44.10	12.61	4.76	1.02		"
	44.55	12.81	4.75	1.02		"
	46.57	13.60	3.83	0.838		E+C
	46.63	13.64	3.89	0.853		"
	46.68	13.65	3.83	0.839		"
	46.62	13.63	3.87	0.848		"
	46.63	13.64	3.88	0.850		B(m)+C(m)
	46.64	13.64	3.85	0.843		"
	46.64	13.64	3.86	0.846		"
	47.62	13.90	2.80	0.612		C
	50.14[b]	14.54	0.00	0.000		"
45	0.00	0.00	32.08	5.652		B
	17.88	4.333	17.52	3.181		"
	31.36	8.034	9.03	1.73		"
	36.12	9.553	6.87	1.36		"
	37.97	10.18	6.09	1.22		"
	41.84	11.57	4.61	0.955		"
	45.88	13.21	3.55	0.766		"
	48.64	14.41	2.80	0.621		"
	49.76	14.92	2.53	0.568		B+E
	49.66	14.88	2.60	0.584		"
	49.71	14.90	2.57	0.577		"
	51.46	15.79	2.38	0.547		B(m)
	20.10	5.078	18.68	3.537		E(m)
	28.23	7.295	12.66	2.452		"
	33.73	8.919	9.13	1.81		"
	37.67	10.19	7.00	1.42		"
	40.14	11.04	5.85	1.21		"
	43.56	12.30	4.45	0.942		"
	46.18	13.36	3.57	0.774		"
	49.48	14.81	2.67	0.599		"
	50.22	15.13	2.40	0.542		E
	51.79	15.92	2.21	0.509		"
	52.57	16.29	1.97	0.458		"
	53.16	16.58	1.80	0.421		E+C
	53.02	16.51	1.85	0.432		"
	53.12	16.53	1.70	0.396		"
	53.10	16.54	1.77	0.413		"
	54.59[b]	16.91	0.00	0.000		C

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6]	Ricci, J.E.; Yanick, N.S.
(2) Sodium chlorate; $NaClO_3$ [7775-09-9]	*J. Am. Chem. Soc.* 1937, 59, 491-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Na_2SO_4 mass %	Na_2SO_4 mol % (compiler)	Density ρ, cm^{-3}	Nature of the solid phase[a]
75	0.00	0.00	30.33	5.233		B
	6.26	1.447	24.70	4.278		"
	27.19	6.749	10.56	1.964		"
	35.05	9.144	6.88	1.35		"
	45.51	12.97	3.19	0.681		"
	50.00	15.01	2.39	0.538		"
	51.85	15.93	2.09	0.481		"
	53.63	16.88	1.92	0.453		"
	54.59	17.39	1.73	0.413		"
	55.78	18.05	1.57	0.381		B+E
	55.62	17.94	1.51	0.365		"
	55.74	18.01	1.49	0.361		"
	55.71	18.00	1.52	0.368		"
	57.81	19.35	1.61	0.404		B(m)
	41.42	11.47	5.11	1.06		E(m)
	42.98	12.05	4.50	0.946		"
	46.82	13.60	3.27	0.712		"
	49.91	14.99	2.51	0.565		"
	51.15	15.59	2.28	0.521		"
	52.84	16.44	1.94	0.452		"
	53.20	16.65	1.99	0.467		"
	54.90	17.60	1.84	0.442		"
	56.25	18.36	1.62	0.396		E
	57.26	18.89	1.30	0.321		"
	58.34	19.62	1.37	0.345		"
	59.79	20.48	1.05	0.270		"
	60.10	20.73	1.14	0.295		"
	60.56	21.02	1.05	0.273		E+C
	60.80	21.14	0.93	0.242		"
	60.73	21.12	1.00	0.261		"
	61.40[b]	21.21	0.00	0.000		C

[a] A = $Na_2SO_4.10H_2O$; B = Na_2SO_4; C = $NaClO_3$; E = double salt, $NaClO_3.3Na_2SO_4$

m = metastable

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 8.641 mol kg^{-1} at 15°C

= 9.448 mol kg^{-1} at 25°C

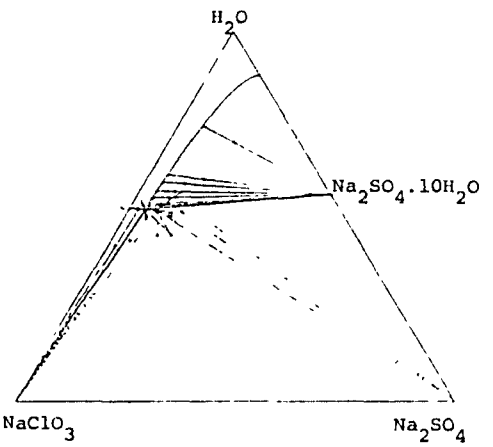
= 11.29 mol kg^{-1} at 45°C

= 14.94 mol kg^{-1} at 75°C

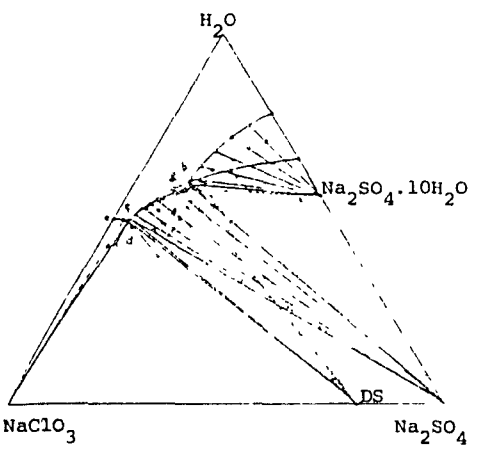
COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6]	Ricci, J.E.; Yanick, N.S.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Am. Chem. Soc.* 1937, 59, 491-6.
(3) Water; H_2O; [7732-18-5]	

COMMENTS AND/OR ADDITIONAL DATA: (Continued)

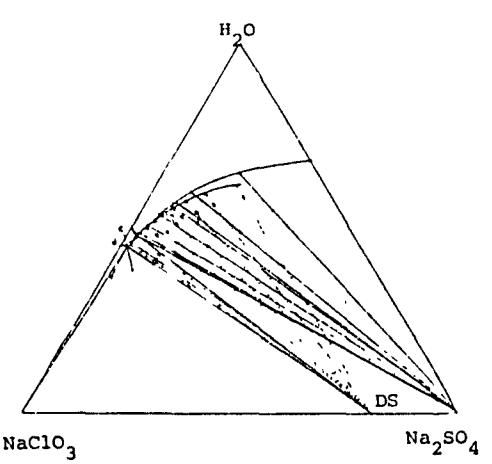
The phase diagrams are given below (based on mass % units)



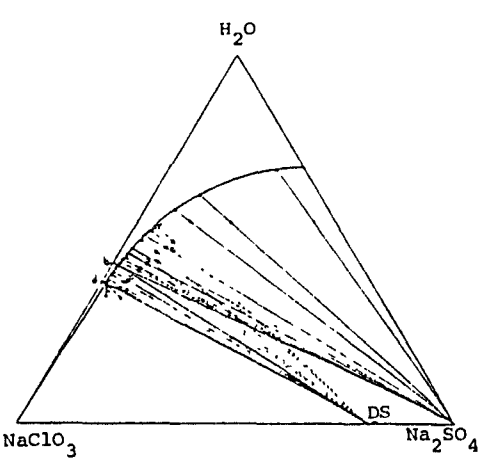
15°C Isotherm



25°C Isotherm



45°C Isotherm



75°C Isotherm

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium sulfate; Na_2SO_4; [7757-82-6] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Windmaisser, F.; Stockl, F. *Monatsh. Chem.* 1951, *82*, 287-94.
VARIABLES: Composition at 291 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

Sodium Chlorate mass %	Sodium Chlorate mol % (compiler)	Sodium Sulfate mass %	Sodium Sulfate mol % (compiler)	Nature of the solid phase[a]
-	-	14.04	2.030	A
9.49	1.92	9.91	1.51	"
14.77	3.097	8.04	1.26	"
20.96	4.628	6.79	1.12	"
25.31	5.819	6.14	1.06	"
29.97	7.231	5.67	1.03	"
34.80	8.885	5.50	1.05	"
40.00	10.93	5.54	1.13	"
39.90	10.89	5.57	1.14	"
42.71	12.12	5.56	1.18	"
43.14	12.33	5.68	1.22	A+B
44.60	12.94	5.28	1.15	B+C
44.09	12.78	5.71	1.24	A(m)
46.88	13.40	2.12	0.454	C
48.86[b]	13.92	-	-	"

[a] A = $Na_2SO_4.10H_2O$; B = Na_2SO_4; C = $NaClO_3$; m = metastable.

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 8.976 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Complexes of salts and water placed in a Jena glass bottle. The bottles were shaken in a thermostat for 24 hours.
The liquid and solid phases were separated by filtration.
Barium chloride was added to the sample solution containing the sulfate to precipitate barium sulfate.
The chlorate content was determined iodometrically by the method of Dietz (ref 1).

SOURCE AND PURITY OF MATERIALS:

No information was given in the paper.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.1 K.

REFERENCES:

1. Dietz, H. *Chem. Ztg.* 1901, 727.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium fluoride; NaF; [7681-49-4] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Vlasov, G.A.; Shishkina, L.A. *Zh. Neorg. Khim.* 1977, *22*, 2309-11; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1977, *22*, 1250-1.
VARIABLES: Composition at 298 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions at 25°C

Sodium Fluoride			Sodium Chlorate			
mol kg^{-1}	mass %	mol % (compiler)	mol kg^{-1}	mass %	mol % (compiler)	Nature of the solid phase[a]
0.928	3.75	1.64	0	0	0	A
0.855	3.38	1.51	0.248	2.49	0.439	"
0.744	2.88	1.31	0.507	4.98	0.895	"
0.692	2.62	1.22	0.756	7.26	1.33	"
0.569	2.11	0.998	1.030	9.68	1.81	"
0.446	1.56	0.773	1.606	15.11	2.955	"
0.351	1.17	0.603	2.290	19.38	3.941	"
0.303	0.95	0.51	3.072	24.42	5.220	"
0.235	0.70	0.40	3.767	28.43	6.333	"
0.133	0.33	0.21	6.421	40.48	10.35	"
0.088	0.19	0.14	8.929	48.65	13.84	A+B
0	0	0	9.352	49.90	14.43	B

[a] A = NaF; B = $NaClO_3$

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
Mixtures of sodium fluoride, sodium chlorate, and water were kept for one month at room temperature in tightly closed polyethylene flasks, and then placed in a thermostat at 25°C. The mixtures were stirred using magnetic stirring. Equilibrium was established after 6-8 hours in the thermostat. The chlorate content was determined by adding excess Fe^{2+} and back-titrating with permanganate. Fluoride was determined by the zirconium alizarin photocolorimetric method. The water content was found by difference.

SOURCE AND PURITY OF MATERIALS:
"Analytically pure" grade $NaClO_3$, highly pure grade NaF, and CO_2-free distilled water were used.

ESTIMATED ERROR:
Soly: nothing specified.
Temp: precision ± 0.5 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Winteler, F. *Z. Electrochem.* 1900, *2*, 360-2.
VARIABLES: T/K = 293 Concentration of NaCl	**PREPARED BY:** Hiroshi Miyamoto and Mark Salomon

EXPERIMENTAL VALUES:

Composition of saturated solutions[a]

conc NaCl		soly $NaClO_3$		Density
g dm^{-3}	c_1/mol dm^{-3}	g dm^{-3}	c_2/mol dm^{-3}	g cm^{-3}
5	0.09	668	6.28	1.426
10	0.17	661	6.21	1.424
15	0.26	653	6.13	1.423
20	0.34	645	6.06	1.421
25	0.43	638	5.99	1.419
30	0.51	630	5.92	1.418
35	0.60	622	5.84	1.417
40	0.68	615	5.78	1.415
45	0.77	607	5.70	1.414
50	0.86	599	5.63	1.412
55	0.94	590	5.54	1.411
60	1.0	582	5.47	1.409
65	1.1	574	5.39	1.408
70	1.2	566	5.32	1.406
75	1.3	559	5.25	1.405
80	1.4	551	5.18	1.404
85	1.4_5	544	5.11	1.402
90	1.5_4	537	5.05	1.401
95	1.6	529	4.97	1.399
100	1.71	522	4.90	1.398
105	1.80	514	4.83	1.396
110	1.88	507	4.76	1.394

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Mixtures of salts and water were thermostated at 20°C for several days, and shaken frequently. Aliquots of the saturated solution were acidified with nitric acid and then titrated with silver nitrate using potassium chromate as an indicator. The compiler assumes that the total salt concentration of the solution was determined gravimetrically, and the chlorate content was determined by difference. It appears that the NaCl concentrations given in the above data table are initial concentrations (compilers).	No information was given. **ESTIMATED ERROR:** Nothing specified. **REFERENCES:**

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5]	Winteler, F.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	Z. *Electrochem.* 1900, *2*, 360-2.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions[a]

concn NaCl		soly $NaClO_3$		Density
g dm^{-3}	c_1/mol dm^{-3} (compiler)	g dm^{-3}	c_2/mol dm^{-3} (compiler)	g cm^{-3}
115	1.97	499	4.69	1.392
120	2.05	491	4.61	1.391
125	2.14	484	4.55	1.389
130	2.22	476	4.47	1.387
135	2.31	467	4.39	1.385
140	2.40	459	4.31	1.383
145	2.48	451	4.24	1.381
150	2.57	442	4.15	1.379
155	2.65	432	4.06	1.377
160	2.74	423	3.97	1.374
165	2.82	414	3.89	1.372
170	2.91	403	3.79	1.369
175	2.99	393	3.69	1.365
180	3.08	382	3.59	1.362
185	3.17	371	3.49	1.359
190	3.25	360	3.38	1.355
195	3.34	349	3.28	1.350
200	3.42	338	3.18	1.345
205	3.51	326	3.06	1.340
210	3.59	315	2.96	1.335
215	3.68	302	2.84	1.330
220	3.76	287	2.70	1.324
225	3.85	270	2.54	1.319
230	3.94	257	3.41	1.313
235	4.02	243	2.28	1.307
240	4.11	228	2.14	1.301
245	4.19	211	1.98	1.295
250	4.28	197	1.85	1.289
255	4.36	184	1.73	1.283
260	4.45	170	1.60	1.276
265	4.53	150	1.41	1.270
270	4.62	135	1.27	1.263
275	4.71	120	1.13	1.256
280	4.79	105	0.986	1.249
285	4.88	91	0.85	1.241
290	4.96	78	0.73	1.235
295	5.05	67	0.63	1.226
300	5.13	55	0.52	1.217

[a] Composition of the solid phases not given.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Billiter, J.
(2) Sodium chloride; NaCl; [7647-14-5]	*Monatsh. Chem.* 1920, *41*, 287-95.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
T/K = 293 to 373	Hiroshi Miyamoto
Concentration of NaCl	

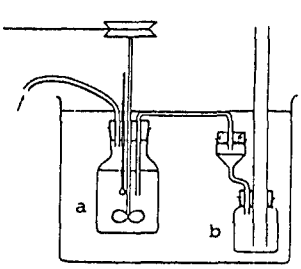
EXPERIMENTAL VALUES:

	concn NaCl		soly $NaClO_3$	
t/°C	g/100 cm^3	c_2/mol dm^{-3}	g/100 cm^3	c_1/mol dm^{-3}
20	0	0	72.2	6.78
	10	1.7	66	6.2
	20	3.4	57.4	5.39
	32	5.5	41.8	3.93
30	0	0	77	0.72
40	0	0	82	7.7
	10	1.7	75	7.0
	20	3.4	65	6.1
	32	5.5	42	3.9
50	0	0	86.6	8.14
60	0	0	91.3	8.58
	10	1.7	83.5	7.84
	20	3.4	70	6.58
	32	5.5	42.4	3.98
70	0	0	96	9.0
80	0	0	100.2	9.41
	10	1.7	92	8.6
	20	3.4	77	7.2
	32	5.5	43.3	4.07
90	0	0	106	9.96
100	0	0	111	10.4
	10	1.7	102	9.58
	20	3.4	87	8.2
	32	5.5	44	4.1

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The apparatus is shown in Fig. 1.



The vessel "a" equipped with a stirrer was sunk in a thermostat and the mixture of salts and water were placed in the vessel. The saturated solution was filtered in a receiver "b" through a siphon-tube. The aliquots of the saturated solution were withdrawn with a pipet.
For determination of chlorate, the aliquot was added to excess acidic $FeSO_4$ solution and titrated with potassium permanganate solution.

SOURCE AND PURITY OF MATERIALS:

No information was given.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Di Capua, C.; Scaletti, U. *Gazz. Chim. Ital.* 1927, 27, 391-9.
VARIABLES: T/K = 293	**PREPARED BY:** B. Scrosati and H. Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions at 20°C[a]

mass %	mol % (compiler)	mass %	mol % (compiler)
0	0	49.56[b]	14.26
4	2	43	12
7.4	3.6	38	10
10	4.7	33.4	8.65
12.75	5.840	28.75	7.231
12.86	5.976	29.82	7.609
14.30	6.372	25.2	6.17
16.06	7.079	22.82	5.523
16.91	7.426	21.8	5.26
17.8	7.58	18.4	4.30
18.04	7.670	18.08	4.221
19.35	8.044	15	3.4
21	8.5	11	2.4
22.1	8.80	8.75	1.91
23.6	9.20	5.5	1.2
25	9.5	2.4	0.50
26.80	10.14	0	0

[a] Composition of solid phases not specified.

[b] For the binary system the compiler computes the following:

Soly of $NaClO_3$ = 9.231 mol kg^{-1}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures of salts and water were stirred in a thermostat for 7 days. Samples of saturated solution were removed with a pipet and weighed. The chlorate ion concentration was determined by the Volhard method after reduction to chloride with zinc and acetic acid. The sodium content was determined by precipitation as the triple acetate of sodium, uranyl and magnesium, according to the method described by Kling and Lasieur (ref 1).

SOURCE AND PURITY OF MATERIALS:

No information given.

ESTIMATED ERROR:

Large error may be related to the method used for the determ of sodium. The method was tested by the authors and errors ranging from +0.5 % to -32 % were found.

REFERENCES:

1. Kling and Lasieur. *Giorn. Chim. Ind. Applicata* 1925, 7.

COMPONENTS:

(1) Sodium chloride; NaCl; [7647-14-5]

(2) Sodium chlorate; $NaClO_3$; [7775-09-9]

(3) Water; H_2O; [7732-18-5]

ORIGINAL MEASUREMENTS:

Nallet, A.; Paris, R.A.

Bull. Soc. Chim. Fr. 1956, 488-94.

VARIABLES:

Composition

T/K = 246.90 to 373

PREPARED BY:

Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

t/°C	Sodium Chloride g/100gH_2O	Sodium Chloride mass % (compiler)	Sodium Chloride mol % (compiler)	Sodium chlorate g/100gH_2O	Sodium chlorate mass % (compiler)	Sodium chlorate mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
-26.25	23.9	19.3	8.89	31.3	23.8	6.03	1.3125	I+A+C
-19.2	25.9	20.1	9.48	33.1	24.9	6.43	1.320	A+C
-19.2	5.45	5.17	2.40	56.8	36.2	9.24	1.340	I+C
- 9.8	27.0	21.3	10.4	36.0	26.5	7.08	1.334	A+C
- 5.7	27.7	21.7	10.7	37.3	27.2	7.37	1.3385	A+B+C
+10	24.9	19.9	10.5	49.9	33.3	9.62	1.3664	B+C
+30	21.25	17.53	10.10	70.6	41.4	13.1	1.4089	"
+50	17.85	15.15	9.552	95.8	48.9	16.9	1.456	"
+70	14.95	13.01	8.899	123.8	55.3	20.8	1.506	"
+100	12.45	11.07	8.884	185	64.9	28.6	1.587	"

[a] A = NaCl.$2H_2O$; B = NaCl; C = $NaClO_3$; I = Ice

METHOD/APPARATUS/PROCEDURE:

Mixtures of salts and water were placed in bottles and agitated in a thermostat for 2 hours at 100°C, and for 2 hours or more at a lower temperature.

Equilibrium was approached from supersaturation.

The chloride ion concentration was determined by a potentiometric method using silver nitrate solution. After the determination of the chloride, the chlorate was reduced with Mohr's salt in mineral acids, and the excess Fe(II) titrated with potassium dichromate solution.

The sodium content was determined in duplicate by flame photometry.

The nature of the solid phase was determined by Schreinemakers' residues method.

The densities of the saturated solutions were also determined.

SOURCE AND PURITY OF MATERIALS:

Sodium chlorate was recrystallized twice and dried. The purity of the sodium chlorate was 99.9 %. Sodium chloride was prepared by passing HCl gas through sodium carbonate solution.

ESTIMATED ERROR:

Soly: precision 0.5 % (compiler).

Temp: nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5] (2) Sodium chlorate; $NaClO_3$ [7775-09-9] (3) Water; H_2O; [7732-18-5]	Oey, T.S.; Koopman, D.E. *J. Phys. Chem.* 1958, *62*, 755-6.
VARIABLES: Composition T/K = 298, 308, 318	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	x[a]	w[b]	$NaClO_3$[c] mol kg^{-1}	NaCl[c] mol kg^{-1}	Sp. gr.	Nature of the solid phase[d]
25	0.0000	9.01	0.000	6.161	1.200	B
	0.1593	8.18	1.081	5.705	1.240	"
	0.2142	7.95	1.496	5.487	1.255	"
	0.2696	7.64	1.959	5.307	1.271	"
	0.3867	7.01	3.062	4.856	1.309	"
	0.4394	6.66	3.662	4.672	1.327	"
	0.4722	6.57	3.990	4.459	1.340	"
	0.6175	5.55	6.176	3.826	1.402	A+B
	0.6940	5.75	6.700	2.954	1.408	A
	0.7478	5.82	7.132	2.405	1.414	"
	0.8362	5.79	8.017	1.570	1.423	"
	0.9163	5.82	8.739	0.798	1.429	"
	1.000	5.88	9.440	0.000	1.440	"
35	0.0000	8.96	0.000	6.195	1.201	B
	0.0948	8.48	0.621	5.925	1.224	"
	0.1808	8.03	1.250	5.663	1.246	"
	0.2265	7.79	1.614	5.512	1.259	"
	0.3333	7.22	2.562	5.126	1.289	"
	0.4382	6.62	3.674	4.711	1.325	"
	0.5932	5.67	5.807	3.983	1.388	"
	0.6754	5.14	7.294	3.505	1.430	A+B
	0.7060	5.18	7.565	3.150	1.433	A
	0.8133	5.26	8.583	1.970	1.444	"
	0.8659	5.29	9.086	1.407	1.451	"

AUXILIARY INFORMATION continued.....

METHOD/APPARATUS/PROCEDURE:
Original method described in (1). Mixtures of known composition were prepared from the solid salts and distilled water in Pyrex solubility tubes, and were equilibrated by rotation in a large thermostated water-bath at various temperatures for periods of 120 hours or longer.
The liquid sample was passed through a glass wool filter without taking the solubility tube or the filter out of the thermostated water-bath. Aliquots of saturated solution were withdrawn with a calibrated pipet having small stopcocks at each end. Procedures for the analysis of chlorate, chloride and alkali were as described in ref (2). The water content was determined by difference. The nature of solid phases was determined by the Schreinemakers' wet residue method.

SOURCE AND PURITY OF MATERIALS:
"Analytical reagent" grade sodium chlorate and chloride were used. The impurities in this grade were deemed much too small to affect the solubility determinations. Distilled water was used in all of the experiments.

ESTIMATED ERROR:
Soly: nothing specified.
Temp: precision ± 0.1 K.

REFERENCES:
1. Cunningham, G.L.; Oey, T.S. *J. Am. Chem. Soc.* 1955, *77*, 799.
2. White, J.F. *Am. Dyestuff Reporter* 1942, *31*, 484.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5]	Oey, T.S.; Koopman, D.E.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Phys. Chem.* 1958, *62*, 755-6.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

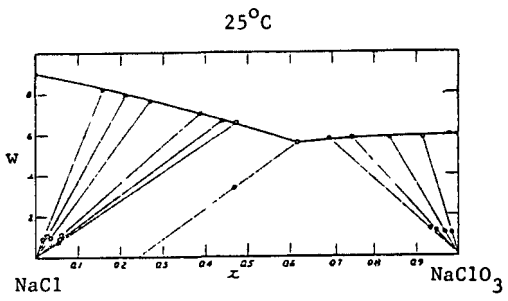
t/°C	x[a]	w[b]	$NaClO_3$[c] mol kg^{-1}	NaCl[c] mol kg^{-1}	Sp. Gr.	Nature of the solid phase[d]
35	0.8942	5.31	9.348	1.106	1.453	A
	1.000	5.35	10.38	0.000	1.467	"
45	0.0000	8.82	0.0000	6.294	1.201	B
	0.1042	8.29	0.6977	5.998	1.226	"
	0.1560	8.04	1.077	5.827	1.240	"
	0.2600	7.50	1.924	5.477	1.267	"
	0.3917	6.81	3.193	4.958	1.308	"
	0.4702	6.39	4.084	4.602	1.336	"
	0.6158	5.47	6.249	3.899	1.398	"
	0.7228	4.75	8.447	3.239	1.458	"
	0.7562	4.69	8.950	2.886	1.462	A+B
	0.8723	4.90	9.882	1.447	1.476	A
	0.9202	4.89	10.45	0.906	1.481	"
	1.0000	4.90	11.33	0.000	1.491	"

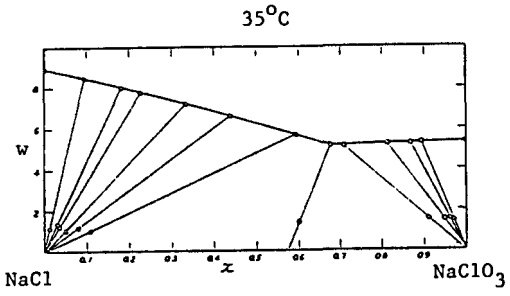
[a] The x function is the moles of sodium chlorate divided by the sum of the moles of sodium chlorate and the moles of sodium chloride.

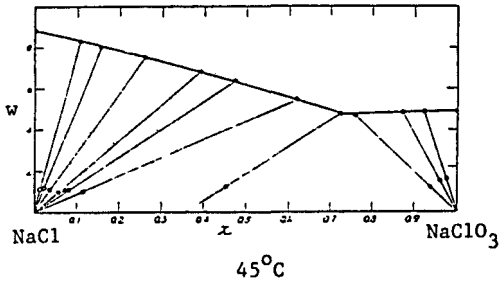
[b] The w function is the moles of water divided by the sum of the moles of sodium chlorate and the moles of sodium chloride.

[c] Molalities calculated by the compiler.

[d] A = $NaClO_3$; B = NaCl







COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chloride; NaCl; [7647-14-5] (2) Sodium chlorate; $NaClO_3$; [7775-09-9] (3) Water; H_2O; [7732-18-5]	Arkhipov, S.M.; Kashina, N.I.; Kuzina, V.A. *Zh. Neorg. Khim.* 1968, *13*, 2872-6; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1968, *13*, 1476-9.
VARIABLES: Composition at 298.2 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

Sodium Chloride		Sodium Chlorate		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
26.56	10.03	---	---	A
23.80	9.313	5.73	1.23	"
22.09	8.966	10.56	2.353	"
18.51	7.862	17.60	4.104	"
16.19	7.274	24.30	5.994	"
12.43	5.980	32.90	8.691	"
11.82	5.794	34.83	9.374	A+B
11.90	5.844	34.91	9.413	"
11.01	5.436	36.05	9.772	B
7.73	3.85	39.50	10.81	"
5.24	2.68	43.40	12.18	"
2.13	1.10	47.04	13.39	"
---	---	50.29[b]	14.62	"

[a] A = NaCl; B = $NaClO_3$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 9.504 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Equilibrium was reached in 30 hours. Samples of the solid and liquid phases were analyzed. Chlorate was found by adding an excess of iron(II) sulfate to an aliquot of saturated solution and back-titrating with potassium permanganate. Chloride was determined argentometrically. Sodium was determined by difference. The solid phases were identified by the method of residues and by X-ray diffraction.

SOURCE AND PURITY OF MATERIALS:

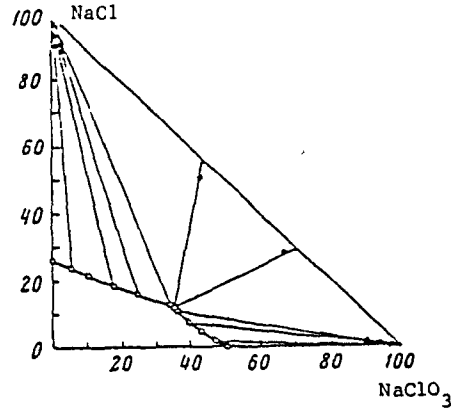
Sodium chlorate and chloride had a purity of 99.9 % or better.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.1 K.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorite; $NaClO_2$; [7758-19-2]	Cunningham, G.L.; Oey, T.S.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Am. Chem. Soc.* 1955, 77, 4498-9.
(3) Water; H_2O; [7732-18-5]	
VARIABLES: Composition; T/K = 288.2 to 318.2	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	x[a]	w[b]	Molalities[c] $NaClO_3$ mol kg^{-1}	Molalities[c] $NaClO_2$ mol kg^{-1}	Sp. Gr.	Nature of the solid phase[d]
15	0.0000	8.18	0.000	6.786	1.327	A
	0.1422	7.23	1.092	6.585	1.361	"
	0.2142	6.55	1.815	6.659	1.383	"
	0.2537[e]	6.30	2.235	6.576	1.394	"
	0.4066	5.12	4.408	6.433	1.457	"
	0.4448	4.78	5.165	6.447	1.482	A+C
	0.5063	4.78	5.880	5.733	1.483	"
	0.5273	5.09	5.750	5.155	1.460	"
	0.7051	5.55	7.052	2.949	1.439	"
	0.8574	5.86	8.122	1.351	1.424	"
	1.0000	6.49	8.553	0.000	1.409	"
25	0.0000	6.50	0.000	8.540	1.375	A
	0.0426	6.22	0.3802	8.544	1.394	"
	0.0598	5.98	0.5551	8.727	1.391	"
	0.0788	5.97	0.7327	8.565	1.402	"
	0.1374	5.58	1.367	8.581	1.421	"
	0.1692	5.41	1.736	8.524	1.463	"
	0.2351	4.88	2.674	8.701	1.461	"
	0.2594	4.72	3.051	8.710	1.474	"
	0.3241	4.22	4.263	8.891	1.508	"
	0.3652	3.86	3.252	9.129	1.535	A+C

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
Method similar to that described in (1) where mixtures of known composition were prepared from the solid salts and distilled water in Pyrex solubility tubes. The mixtures were equilibrated by rotation in a large thermostated water-bath at various temperatures for periods of 120 hours or longer. The liquid sample was passed through a glass wool filter without taking the solubility tube or the filter out of the thermostated water-bath. Aliquots of saturated solution were withdrawn with a calibrated pipet having small stopcocks at each end. Procedures for the analysis of chlorite, chlorate and alkali were described in ref (2). The water content was determined by difference. The nature of solid phases was determined by the Schreinemakers' wet residue method.

SOURCE AND PURITY OF MATERIALS:
C.p. grade sodium chlorate was used. Technical grade sodium chlorite (Mathieson Chemical Co.) was recrystallized three times from distilled water as the trihydrate, and then stored in a cool place in amber bottles. Anal. Found: $NaClO_2$, 58.50 %, NaCl, 0.00 %, $NaClO_3$, 0.00 %; alkalinity as Na_2O, 0.06 %; water by difference, 41.44 %. Distilled water was used.

ESTIMATED ERROR:
Soly: nothing specified.
Temp: precision ± 0.1 K (authors).

REFERENCES:
1. Cunningham, G.L.; Oey, T.S. *J. Am. Chem. Soc.* 1955, 77, 799.
2. White, J.F. *Am Dyestuff Reporter* 1942, 31, 484.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorite; $NaClO_2$; [7758-19-2]	Cunningham, G.L.; Oey, T.S.
(2) Sodium chlorate; $NaClO_3$; [7775-09-9]	*J. Am. Chem. Soc.* 1955, 77, 4498-9.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

			Molalities[c]			
t/°C	x[a]	w[b]	$NaClO_3$ mol kg^{-1}	$NaClO_2$ mol kg^{-1}	Sp. Gr.	solid phase[d]
25	0.3941	4.22	5.184	7.970	1.520	C
	0.5004	4.56	6.091	6.082	1.498	"
	0.6278	4.87	7.156	4.242	1.472	"
	0.7269	5.07	7.958	2.990	1.461	"
	0.8053	5.24	8.531	2.063	1.456	"
	0.8486	5.30	8.888	1.586	1.450	"
	0.9046	5.50	9.130	0.963	1.446	"
	1.0000	5.88	9.440	0.000	1.444	"
35	0.0000	4.95	0.000	11.21	1.406	A
	0.0464	4.54	0.567	11.66	1.478	"
	0.1202[d]	4.06	1.643	12.03	1.515	"
	0.2276	3.56	3.549	12.05	1.563	"
	0.2918	3.42	4.736	11.49	1.571	"
	0.3177	3.15	5.598	12.02	1.595	A+C
	0.3171	3.13	5.624	12.11	1.595	"
	0.4475	3.82	6.503	8.028	1.540	C
	0.5411	4.17	7.203	6.109	1.516	"
	0.7103	4.55	8.665	3.534	1.490	"
	0.8657	4.89	9.827	1.525	1.473	"
	1.0000	5.06	10.97	0.000	1.467	"
45	0.0000	4.28	0.000	12.97	1.501	B
	0.1482	3.64	2.260	12.99	1.543	"
	0.2550	3.25	4.355	12.72	1.586	"
	0.3524	2.85	6.864	12.61	1.621	B+C
	0.4112	3.16	7.223	10.34	1.590	C
	0.5141	3.54	8.061	7.619	1.558	"
	0.6397	3.97	8.944	5.038	1.529	"
	0.7745	4.18	10.29	2.995	1.510	"
	1.0000	4.41	12.59	0.000	---	"

[a] The x function is the moles of sodium chlorate divided by the sum of the moles of sodium chlorate and the moles of sodium chlorite.

[b] The w function is the moles of water divided by the sum of the moles of sodium chlorate and the moles of sodium chlorite.

[c] Molalities calculated by the compiler.

[d] A = $NaClO_2.3H_2O$; B = $NaClO_2$; C = $NaClO_3$.

[e] The solubility tube put in a water-bath for 5 and 10 days.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J.E.
(2) Sodium bromide; NaBr; [7647-15-6]	*J. Am. Chem. Soc.* 1944, *66*, 1015-6.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition at 298.15 K	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	NaBr mass %	NaBr mol % (compiler)	Nature of the solid phase[a]
50.10[b]	14.52	0	0	A
37.93	10.94	11.86	3.537	"
29.54	8.566	20.72	6.215	"
20.87	6.165	30.75	9.397	"
16.29	4.912	36.77	11.47	"
15.37	4.662	38.10	11.95	"
13.87[c]	4.251	40.32	12.78	A+B
13.89	4.256	40.28	12.77	"
13.97	4.280	40.18	12.73	"
13.85	4.247	40.36	12.80	"
14.03	4.297	40.11	12.71	"
13.98	4.283	40.18	12.74	"
(Av)13.89	4.256	40.28	12.77	"
12.38	3.758	41.16	12.92	B
8.07	2.387	43.74	13.39	"
7.22	2.126	44.28	13.49	"
0	0	48.49	14.15	"

[a] A = $NaClO_3$; B = $NaBr.2H_2O$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 9.433 mol kg^{-1}

[c] Isothermally invariant solution saturated with two salts, the density of the solution = 1.583 g cm^{-3}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Complexes were stirred for at least two days at 25°C. Equilibrium was established in several instances by constancy of composition upon repeated analysis.

The analysis of the saturated aqueous solution involved argentometric titration of the chloride with eosin as adsorption indicator, determination of water in a separate sample by evaporation, and calculation of the sodium chlorate by difference. A few of the chloride determinations for the isothermally invariant points were verified by the Volhard method.

The solubilities of the individual salts were determined both volumetrically and by evaporation, with very close agreement between the two methods.

SOURCE AND PURITY OF MATERIALS:

C.p. grade $NaClO_3$ and NaBr were used without further purification.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: precision ± 0.05 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Sodium bromate; $NaBrO_3$; [7789-38-0] (3) Water; H_2O; [7732-18-5]	Swenson, T.; Ricci, J.E. *J. Am. Chem. Soc.* 1939, *61*, 1974-7.
VARIABLES: Composition at 298 and 323 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	$NaBrO_3$ mass %	$NaBrO_3$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Nature of the solid phase[a]
25	28.29[b]	4.498	0	0	A
	16.46	2.816	18.91	4.586	"
	13.96	2.466	24.21	6.062	"
	12.20	2.208	28.03	7.191	"
	8.68	1.68	36.75	10.06	"
	7.14	1.43	40.98	11.62	"
	7.00	1.41	41.47	11.82	SSI
	6.54	1.33	42.62	12.26	"
	5.99	1.22	43.66	12.64	"
	6.05	1.24	43.55	12.60	SSI+SSII
	5.33	1.09	44.64	12.98	SSII
	5.07	1.04	44.98	13.09	"
	4.49	0.922	45.66	13.30	"
	3.79	0.779	46.46	13.54	"
	3.69	0.759	46.56	13.57	"
	2.84	0.584	47.42	13.81	"
	1.89	0.388	48.36	14.07	"
	0.96	0.20	49.16	14.27	"
	0.79	0.16	49.36	14.33	"
	0	0	50.07[b]	14.51	B

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
The solubilities detd by the usual procedures of stirring, sampling, filtering and temperature control. Starting with complexes of known composition, and analyzing the saturated solutions at equilibrium, the solid phases were determined by the methods of graphical or algebraic extrapolation and occasional analyses of wet and centrifuged residues.
The analytical method for the saturated solutions depended on the combined percentage of the $NaClO_3$ and $NaBrO_3$. For large $NaBrO_3$ compositions, solutions were analyzed by evaporation, and iodometric titration of the bromate with thiosulfate solution, thus allowing the calculation of the percentage of the chlorate by difference. In the presence of a large amount of chlorate, small quantitites of bromate were determined as follows: to about 100 ml of solution was added sodium iodide, 5 g (20 ml of 25 % solution) giving a concentration of 0.33N after dilution to 100 ml and 1.5 ml of concentrated HCl (0.18 to 0.2N after dilution). After waiting 1.5 min, the sln

continued.....

SOURCE AND PURITY OF MATERIALS:
Sodium bromate was purified by recrystallization. Sodium chlorate contained small amounts of the corresponding bromate; this bromate content was determined by iodometric titration, and the necessary corrections were then made when the dry chlorates are weighed out for the preparation of the ternary complexes.

ESTIMATED ERROR:
Soly: precision 0.05 %.
Temp: nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Swenson, T.; Ricci, J.E.
(2) Sodium bromate; $NaBrO_3$; [7769-38-0]	*J. Am. Chem. Soc.* 1939, *61*, 1974-7.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaBrO_3$ mass %	$NaBrO_3$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Nature of the solid phase[a]
50	35.50	6.166	0	0	A
	27.3	4.87	10.8	2.73	"
	11.2	2.31	38.9	11.4	A or SS
	7.09	1.56	47.7	14.9	SS
	6.75	1.49	48.2	15.1	"
	5.80	1.28	49.1	15.4	"
	4.53	1.01	51.1	16.1	"
	2.83	0.632	53.0	16.8	"
	2.62	0.586	53.3	16.9	"
	1.35	0.301	54.4	17.2	"
	0	0	55.54[b]	17.45	B

[a] A = $NaBrO_3$; B = $NaClO_3$

SSI = sodium bromate solid solution containing up to 5 - 10 % sodium chlorate

SSII = sodium chlorate solid solution containing from 0 to 60-65 % sodium bromate

SS = solid solution, the composition is not given.

[b] For binary systems the compiler computes the following:

soly of $NaClO_3$ = 9.421 mol kg^{-1} at 25°C

= 11.74 mol kg^{-1} at 50°C

soly of $NaBrO_3$ = 2.614 mol kg^{-1} at 25°C

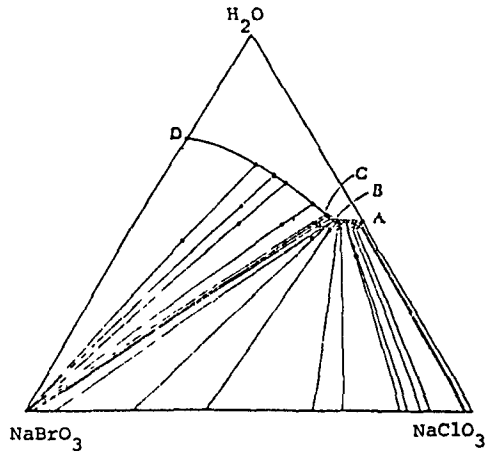
= 3.648 mol kg^{-1} at 50°C

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

(Continued)
was titrd with 0.2 N sodium thiosulfate solution.
The same procedure using a 0.02N sodium thiosulfate solution for titration could be used for the detection of quantities as small as 0.001(± 0.0005) % of bromate in chlorate.

COMMENTS AND/OR ADDITIONAL DATA:
The phase diagram is given below (based on mass % units).



25°C Isotherm

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Sodium iodide; NaI; [7681-82-5] (3) Water; H_2O; [7732-18-5]	Ricci, J.E. *J. Am. Chem. Soc.* 1944, *66*, 1015-6.
VARIABLES:	**PREPARED BY:**
Composition at 298.15 K	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

$NaClO_3$		NaI		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
50.10[b]	14.52	0	0	A
38.72	11.51	12.40	2.618	"
27.62	8.522	25.23	5.528	"
18.67	6.036	36.53	8.387	"
10.28	3.584	48.76	12.08	"
7.11	2.614	54.63	14.26	"
5.44	2.095	58.56	16.01	"
4.50[c]	1.808	61.52	17.55	A+B
4.28	1.720	61.74	17.62	"
4.08	1.635	61.79	17.58	"
4.20	1.684	61.73	17.58	"
4.51	1.815	61.61	17.61	"
4.32	1.735	61.68	17.59	"
2.83	1.126	62.65	17.70	B
1.43	0.566	63.67	17.88	"
1.22	0.484	64.00	18.02	"
0	0	64.80	18.12	"

[a] A = $NaClO_3$; B = $NaI.2H_2O$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 9.433 mol kg^{-1}

[c] Isothermally invariant solution saturated with two salts, the density of the solution = 1.911 g cm^{-3}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Complexes were stirred for at least two days at 25°C. Equilibrium was established in several instances by constancy of composition upon repeated analysis.

The analysis of the saturated aqueous solution involved argentometric titration of the chloride with eosin as adsorption indicator, determination of water in a separate sample by evaporation, and calculation of the sodium chlorate by difference. A few of the chloride determinations for the isothermally invariant points were verified by the Volhard method.

The solubilities of the individual salts were determined both volumetrically and by evaporation, with very close agreement between the two methods.

SOURCE AND PURITY OF MATERIALS:

C.p. grade $NaClO_3$ and NaI were used without further purification.

ESTIMATED ERROR:

Soly: nothing specified.

Temp: precision ± 0.05 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J.E.
(2) Sodium iodate; $NaIO_3$; [7681-55-2]	*J. Am. Chem. Soc.* 1938, *60*, 2040-3.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition at 298.15 K and 323.15 K	Hiroshi Miyamoto and Mark Salomon

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	$NaIO_3$ mass %	$NaIO_3$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
25	8.57[b]	0.846	0.0	0.0	1.075	A
	4.51	0.462	8.36	1.591	1.098	"
	3.14	0.343	16.50	3.347	1.146	"
	2.43	0.286	24.67	5.402	1.204	"
	1.97	0.252	32.57	7.748	1.273	"
	1.69	0.232	38.66	9.862	1.332	"
	1.52	0.220	42.99	11.57	-	"
	1.46	0.216	44.56	12.23	1.396	"
	1.39	0.210	46.37	13.03	1.404	"
	1.33	0.206	48.13	13.85	1.425	"
	1.30	0.204	49.19	14.37	1.440	"
	1.29	0.203	49.42	14.48	1.445	A+C
	1.29	0.203	49.40	14.47	-	"
	1.29	0.203	49.32	14.43	1.441	"
	1.29	0.203	49.44	14.49	1.446	"
	1.29	0.203	49.32	14.43	1.444	"
	1.29	0.203	49.40	14.47	-	"
	1.29	0.203	49.38	14.46	1.444(av)	"
	1.16	0.183	49.52	14.50	1.444	C
	0.0	0.0	50.14	14.54	-	"

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method. At 25°C complexes of known compn seeded and stirred for up to 60d, and mean error in compn of solid phases was 1 %. At 50°C equil was readily attained and mean error in solid phase compn was 0.09 %. More precise solid phase compns at 25°C obtained by first dissolving $NaIO_3.H_2O$ followed by addn of $NaClO_3$, seeding with the monohydrate, and stirring for at least 6 d. At 50°C metastability for anhyd and hydrated $NaIO_3$ easily maintained, in the first case by starting with anhyd salt and not seeding, and in the second case by starting with the hydrate and seeding.

Filtered samples of satd sln analyzed for iodate by titrn with std thiosulfate in the presence of excess KI and acetic acid: titrn error was 1 part in 3000. Total solids detd by evapn to dryness, and $NaClO_3$ detd by difference. Solid phase compn detd by algebraic extrapolation of tie-lines. The mean error of 1 % in compn at 25°C indicates existence of the anhyd salt even after 60 d of stirring. This problem was eliminated by first preparing the sln with the hydrate as described above. (continued)

SOURCE AND PURITY OF MATERIALS:

C.p. grade sodium iodate recrystallized, and dried at 100-110°C. Analysis by titrn with std thiosulfate sln showed it to be 100.0 % pure. C.p. grade sodium chlorate was powdered and dried at 150-200°C.

ESTIMATED ERROR:

Soly: precision ± 0.04 %.
Solid phase compn: see discussion at left.
Temp: precision ± 0.01 K.

METHOD/APPARATUS/PROCEDURE: (Continued)

Densities of satd slns at 25°C detd by means of pipets calibrated for delivery.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J. E.
(2) Sodium iodate; $NaIO_3$; [7681-55-2]	J. Am. Chem. Soc. 1938, 60, 2040-3.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	$NaIO_3$ mass %	$NaIO_3$ mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
50	13.49	1.400	0.00	0.000		A
	7.67	0.824	10.02	2.002		"
	5.69	0.639	16.56	3.457		"
	4.91	0.570	20.61	4.448		"
	3.23	0.424	33.33	8.131		"
	2.41	0.357	43.71	12.030		"
	2.12	0.336	48.95	14.432		A(m)
	1.92	0.323	53.20	16.66		"
	1.87	0.321	54.58	17.44		A(m)+C
	1.87	0.322	54.61	17.46		"
	1.87	0.322	(av) 54.59	17.45		"
	2.50	0.369	43.41	11.91		B(m)
	(2.2)[c]	0.330	(45)[c]	12.56		A+B
	2.14	0.334	47.86	13.90		B
	1.75	0.297	53.83	16.97		"
	1.71	0.294	54.69	17.46		B+C
	1.68	0.289	54.74	17.48		"
	1.69	0.290	(av) 54.71	17.47		"
	1.26	0.216	54.98	17.50		C
	0.0	0.0	55.74	17.57		"

[a] A = $NaIO_3.H_2O$; B = $NaIO_3$; C = $NaClO_3$

[b] Interpolated

[m] Metastable

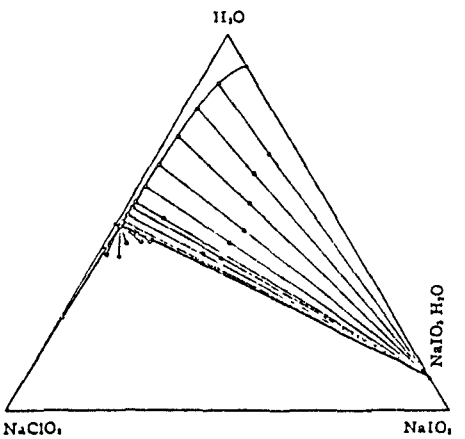
For the binary system the compiler computes the following

soly of $NaIO_3$ = 0.474 mol kg^{-1} at 25°C

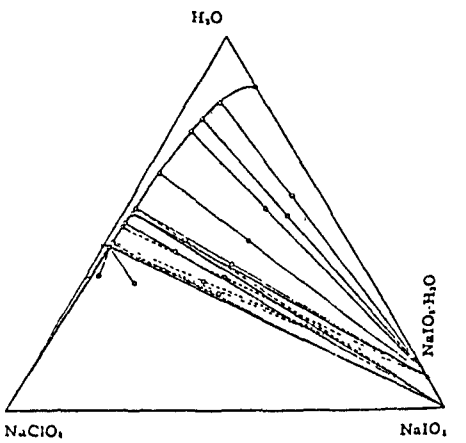
= 0.7880 mol kg^{-1} at 50°C

COMMENTS AND/OR ADDITIONAL DATA:

Isotherms based on mass % units are reproduced below.



25°C Isotherm



50°C Isotherm

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H_2O; [7732-18-5]	Windmaisser, F.; Stockl, F. *Monatsh. Chem.* 1951, *82*, 287-94.
VARIABLES: Composition at 291 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions at 18°C.

Sodium		Sodium Chlorate		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
-	-	48.86[b]	13.92	A
6.55	4.54	37.86	9.866	"
15.25	9.706	25.10	6.003	"
19.93	12.32	19.45	4.516	"
33.34	19.99	7.90	1.78	"
41.58	25.36	3.98	0.912	"
44.56	27.69	3.65	0.852	"
46.90	29.64	3.56	0.845	"
48.73	31.20	3.46	0.832	A+B
51.43	32.29	-	-	B

[a] A = $NaClO_3$; B = $NaOH.H_2O$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 8.976 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The details of the solubility determinations were not given in the original paper, but see the compilation for the $NaClO_3$-Na_2SO_4-H_2O system by these authors.	No information given.
	ESTIMATED ERROR: Nothing specified.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Potassium chlorate; $KClO_3$; [3811-04-9] (3) Water; H_2O; [7732-18-5]	Di Capua, C.; Scaletti, U. *Gazz. Chim. Ital.* 1927, 27, 391-9.
VARIABLES: T/K = 293	**PREPARED BY:** B. Scrosati and H. Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions at 20°C (solid phases not specified)

$NaClO_3$		$KClO_3$	
mass %	mol % (compiler)	mass %	mol % (compiler)
49.56[a]	14.26	0	0
3.01	0.543	4.25	0.666
6.01	1.11	3.65	0.584
8.42	1.59	4.13	0.678
14.93	2.988	3.56	0.619
22.34	4.827	3.65	0.685
26.33	5.924	3.40	0.664
32.87	7.896	2.62	0.547
34.93	8.587	2.50	0.534
40.05	10.49	2.50	0.569
40.35	10.63	2.60	0.595
42.57	11.54	2.57	0.605
0	0	6.75[a]	1.05
47.43	13.31	0.34	0.083
47.82	13.49	0.31	0.076
48.50	13.80	0.24	0.059
48.40	13.73	0.14	0.034
48.60	13.83	0.20	0.049
48.84	13.95	0.20	0.050

[a] For the binary systems the compiler computes the following:

soly of $NaClO_3$ = 9.231 mol kg^{-1}

soly of $KClO_3$ = 0.591 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures of salts and water were stirred in a thermostat for 7 days. Samples of saturated solution were withdrawn with a pipet and weighed.

The chlorate ion concentration was determined by the Volhard method after reduction to chloride with zinc and acetic acid. The sodium content was determined by precipitation as the triple acetate of sodium, uranyl and magnesium, according to the method described by Kling and Lasieur (ref 1).

SOURCE AND PURITY OF MATERIALS:

No information is given.

ESTIMATED ERROR:

Large error may be related to the method used for the determ of sodium. The method was tested by the authors and errors ranging from +0.5 % to -32 % were found.

REFERENCES:

1. Kling and Lasieur. *Giorn. Chom. Ind. Applicata* 1925, 7.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$ [7775-09-9] (2) Potassium chlorate; $KClO_3$; [3811-04-9] (3) Water; H_2O; [7732-18-5]	Munter, P.A.; Brown, R.L. *J. Am. Chem. Soc.* 1943, *65*, 2456-7.
VARIABLES: Composition at 273 K and 313 K	**PREPARED BY:** Hiroshi Miyamoto and Mark Salomon

EXPERIMENTAL VALUES:

Composition at the isothermally invariant points

t/°C	Sodium Chlorate		Potassium Chlorate		Water	
	mass %	mol % (compiler)	mass %	mol % (compiler)	mass %	mol % (compiler)
0	44.21	11.90	0.44	0.10	55.35	88.00
40	51.75	16.19	3.41	0.927	44.85	82.88

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

At 0°C mixts were sealed in Pyrex bottles which were fastened to a rotor suspended in a glycerol/water bath. At 40°C mixts were placed in 250 ml 3-neck flasks and thermostated in a water bath. The slns were stirred with glass stirrers provided with mercury seals.

Preliminary experiments identified mixtures which result in satd solutions, several of which were used to prepare the solutions reported in the data table above. Only the compositions of two solutions were reported.

Equilibrated slns were sampled by withdrawing aliquots with pipets fitted with cotton plugs. After determining densities the solutions were diluted for analyses.

Chlorate detd by the method of Dietz as described in (1). Sodium was detd by pptn with zinc uranyl nitrate, and potassium detd by calculation based on stoichiometry. Water was found by difference.

SOURCE AND PURITY OF MATERIALS:

C.p. grade salts were used without further purification.

The chlorates were found to be 99.9 % pure.

ESTIMATED ERROR:

Soly: nothing specified but probably poor due to method of analysis of Na.

Temp: at 0°C precision = ± 0.1 K.
at 40°C precision = ± 0.05 K.

REFERENCES:

1. Kolthoff, I.M.; Furman, N.H. *Volumetric Analysis, Vol II.* 1929, 388.

COMPONENTS:

(1) Sodium chlorate; $NaClO_3$; [7775-09-9]

(2) Potassium chlorate; $KClO_3$; [3811-04-9]

(3) Water; H_2O; [7732-18-5]

ORIGINAL MEASUREMENTS:

Nallet, A.; Paris, R.A.

Bull. Soc. Chim. Fr. 1956, 488-94.

VARIABLES:

Composition

T/K = 255.30 to 373

PREPARED BY:

Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

t/°C	Sodium chlorate g/100gH_2O	Sodium chlorate mass % (compiler)	Sodium chlorate mol % (compiler)	Potassium chlorate g/100gH_2O	Potassium chlorate mass % (compiler)	Potassium chlorate mol % (compiler)	Density g cm^{-3}	Nature of the solid phase[a]
-17.85	65.9	39.7	10.1	0.665	0.661	0.146	1.356	A+B+I
- 9.8	71.7	41.8	11.0	1.00	0.990	0.226	1.3735	A+B
- 9.8	35.3	26.1	5.69	0.822	0.815	0.154	1.217	B+I
- 4	14.62	12.76	2.441	1.16	1.15	0.191	1.095	"
+10	88.1	31.6	7.47	2.38	2.32	0.476	1.4173	A+B
+30	106.1	51.48	16.25	5.14	4.89	1.35	1.4625	"
+50	127.3	56.01	20.72	9.97	9.07	2.91	1.510	"
+70	153.9	60.61	28.00	18	15	6.1	1.566	"
+100	212	67.9	60.8	40.6	28.9	22.4	1.661	"

[a] A = $NaClO_3$; B = $KClO_3$; I = Ice.

METHOD/APPARATUS/PROCEDURE:

Mixtures of salts and water were placed in bottles and agitated in a thermostat for 2 hours at 100°C, and for 2 hours or more at a lower temperature.

Equilibrium was approached from supersaturation.

The chlorate was reduced with Mohr's salt in mineral acids, and the excess Fe(II) titrated with potassium dichromate solution.

The analyses of cations were performed in duplicate.

The potassium and sodium contents were determined by flame photometry, and also the potassium was determined gravimetrically with sodium tetraphenylborate.

The nature of the solid phase was determined by Schreinemakers' residues method.

The densities of the saturated solutions were also determined.

SOURCE AND PURITY OF MATERIALS:

Sodium and potassium chlorate were recrystallized twice. The purity of the chlorates was 99.9 %.

ESTIMATED ERROR:

Soly: precision 0.5 % (compiler).

Temp: nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Rubidium chlorate; $RbClO_3$; [13446-71-4] (3) Water; H_2O; [7732-18-5]	Arkhipov, S.M.; Kashina, N.I.; Kuzina, V.A. *Zh. Neorg. Khim.* 1968, *13*, 2872-6; *Russ. J. Inorg. Chem. (Engl. Transl.)* 1968, *13*, 1476-9.
VARIABLES: Composition at 298.2 K	PREPARED BY: Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solutions

Rubidium Chlorate mass %	Rubidium Chlorate mol % (compiler)	Sodium Chlorate mass %	Sodium Chlorate mol % (compiler)	Nature of the solid phase[a]
6.42[b]	0.726	---	---	A
4.61	0.532	4.15	0.760	"
2.69	0.329	12.55	2.437	"
2.20	0.294	21.83	4.624	"
1.83	0.273	32.22	7.616	"
1.80	0.303	42.27	11.31	"
1.67	0.300	47.00	13.38	"
1.70	0.316	49.44	14.58	A+B
1.68	0.312	49.41	14.56	"
1.13	0.209	49.81	14.63	B
---	---	50.29[b]	14.62	"

[a] A = $RbClO_3$; B = $NaClO_3$

[b] For binary systems the compiler computes the following:

soly of $RbClO_3$ = 0.406 mol kg^{-1}

soly of $NaClO_3$ = 9.504 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Equilibrium reached in 30 hours. Samples of solid and liquid phases were analyzed. Rubidium was determined as the tetraphenylborate or when at low concentration, by flame photometry. Chlorate was found by adding an excess of iron(II) sulfate to an aliquot of saturated solution and back-titrating with potassium permanganate. Sodium was determined by difference.
The solid phases were identified by the method of residues, and by X-ray diffraction.

SOURCE AND PURITY OF MATERIALS:

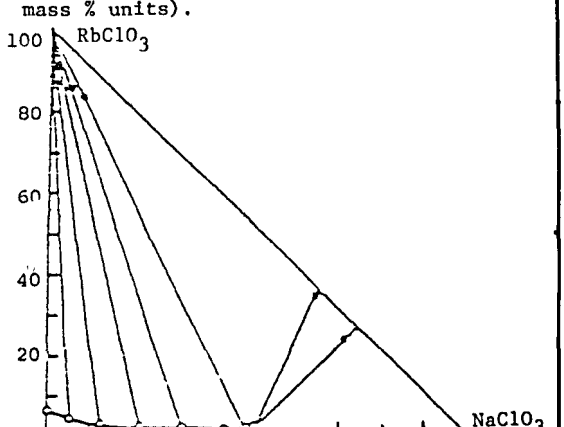
Sodium chlorate and rubidium chlorate had a purity of 99.9 % or more.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.1 K.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Cesium chlorate; $CsClO_3$; [13763-67-2] (3) Water; H_2O; [7732-18-5]	Arkhipov, S.M.; Kashina, N.I. *Zh. Neorg. Khim.* 1970, *15*, 760-4. *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1970, *15*, 391-2.
VARIABLES:	**PREPARED BY:**
Composition at 298.2 K	Hiroshi Miyamoto

EXPERIMENTAL VALUES:

Composition of saturated solution at 25°C

Cesium Chlorate		Sodium Chlorate		Nature of the solid phase[a]
mass %	mol % (compiler)	mass %	mol % (compiler)	
7.24[b]	0.646	---	---	A
3.74	0.346	7.86	1.48	"
2.78	0.278	17.07	3.470	"
2.48	0.273	26.68	5.976	"
2.17	0.277	39.58	10.29	"
2.18	0.294	43.54	11.92	"
2.17	0.299	45.25	12.68	"
2.15	0.315	49.64	14.79	A+B
2.13	0.312	49.58	14.76	"
---	---	50.20[b]	14.57	B

[a] A = $CsClO_3$; B = $NaClO_3$

[b] For binary systems the compiler computes the following:

soly of $NaClO_3$ = 9.470 mol kg^{-1}

soly of $CsClO_3$ = 0.361 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Solubilities were determined by the isothermal method by mixing the solid and liquid phases in glass test-tubes and thermostating in a water bath. Samples of liquid and solid phases were analyzed for the anions and cesium.

Chlorate was found by adding excess iron(II) sulfate to an aliquot of saturated solution and back-titrating with potassium permanganate solution. Cesium was determined gravimetrically as cesium tetraphenylborate. Sodium was found by difference. The solid phases were identified by the method of residues, and X-ray diffraction.

SOURCE AND PURITY OF MATERIALS:

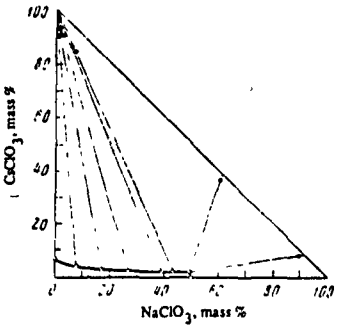
C.p. grade $NaClO_3$ and $CsClO_3$ with a purity of 99.5 % or better were used.

ESTIMATED ERROR:

Soly: nothing specified.
Temp: precision ± 0.1 K.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Barium chlorate; $Ba(ClO_3)_2$; [13477-00-4] (3) Water; H_2O; [7732-18-5]	Di Capua, C.; Bertoni, A. *Gazz. Chim. Ital.* 1928, *58*, 249-53.
VARIABLES: T/K = 293 Composition	**PREPARED BY:** B. Scrosati, H. Miyamoto and M. Salomon

EXPERIMENTAL VALUES:

Solubilities in the $NaClO_3$-$(BaClO_3)_2$-H_2O ternary system at 20°C.[a]

$NaClO_3$		$Ba(ClO_3)_2$	
mass %	mol kg^{-1}	mass %	mol kg^{-1}
4.97	9.283[b]	0	0
45.	7.84	1.05	0.0640
43.2	7.506	2.73	0.166
36.5	5.696	3.30	0.180
29.52	4.218	4.73	0.236
25.32	3.47	6.13	0.294
15.52	1.908	8.05	0.346
8.5	0.983	10.29	0.416
4.52	0.540	16.91	0.707
0	0	23.75	1.024[c]

[a] Molalities calculated by the compilers.

[b] Author gives 9.228 mol kg^{-1}.

[c] Author gives 1.068 mol kg^{-1}.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The method and the procedure for preparing the saturated solutions were not reported in the original publication.

Chloride was determined by the Mohr method, and chlorate was determined by the Volhard method after reduction with zinc and acetic acid. The barium content was determined gravimetrically as the sulfate, and the sodium content was determined by difference after the mass of water was determined.

Nature of solid phases not specified.

SOURCE AND PURITY OF MATERIALS:

Nothing specified.

ESTIMATED ERROR:

No estimates possible due to insufficient experimental details.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J.E.; Weltman, C.
(2) Sodium chromate; Na_2CrO_4; [7775-11-3]	*J. Am. Chem. Soc.* 1942, *64*, 2746-8.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition T/K = 293, 298 and 323	Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	Sodium chromate mass %	Sodium chromate mol % (compiler)	Sodium chlorate mass %	Sodium chlorate mol % (compiler)	Nature of the solid phase[a]
19	0.00	0.00	48.28[b]	13.64	A
	6.43	1.20	41.91	11.93	"
	14.56	2.738	33.59	9.611	"
	27.00	5.170	21.57	6.285	"
	35.05	6.915	15.01	4.506	A+C
	35.03	6.911	15.03	4.512	"
	35.04	6.913	15.02	4.509	"
	37.26	7.146	10.70	3.123	C
	40.60	7.571	5.14	1.459	"
	42.26	7.766	2.31	0.646	"
	43.63	7.926	0.00	0.000	B
25	0.00	0.00	(50.06)[b]	14.50	A
	5.95	1.14	43.88	12.75	"
	12.45	2.381	37.06	10.79	"
	20.42	3.949	29.30	8.623	"
	28.51	5.583	21.50	6.407	"
	35.18	7.021	15.65	4.753	"
	36.43	7.283	14.43	4.390	A+D
	36.44	7.287	14.44	4.394	"
	36.43	7.283	14.43	4.390	"
	36.43	7.283	14.43	4.390	"
	39.47	7.734	9.82	2.93	D

continued...

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures prepd by weight and rotated in a thermostat at the specified temperature. About three days were required to reach equilibrium.

Samples for analysis withdrawn with pipets fitted with filter paper. Sodium chromate in the presence of sodium chlorate was detd volumetrically as follows: the chromate was pptd by addn of barium chloride. The precipitate was filtered, dissolved in HNO_3, and the chromate titrd with thiosulfate solution.

Sodium chlorate detd by difference from the percentage of total solid obtained by evaporation of the satd solution at 110°C. To supplement the indirect detn of chlorate, direct gravimetric analysis carried out by reduction of chlorate with SO_2 followed by pptn of chloride as AgCl.

The solubility result given in parenthesis in the above table was determined by evaporation.

SOURCE AND PURITY OF MATERIALS:

C.p. grade sodium chlorate was used and found to be 100.0 % pure by reduction and precipitation. Sodium chromate tetrahydrate (Mackay Co.) was used; the percentage of Na_2CrO_4 found by titration was 69.15 % and by dehydration 69.25 % as compared with the theoretical value of 69.21 %.

ESTIMATED ERROR:

Soly: accuracy within ± 0.05 % (authors).
Temp: precision ± 0.02 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J.E.; Weltman, C.
(2) Sodium chromate; Na_2CrO_4; [7775-11-3]	*J. Am. Chem. Soc.* 1942, *64*, 2746-8.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

Composition of saturated solutions

t/°C	Sodium chromate mass %	Sodium chromate mol % (compiler)	Sodium chlorate mass %	Sodium chlorate mol % (compiler)	Nature of the solid phase[a]
25	41.04	7.949	7.34	2.16	D
	45.59	8.525	0.00	0.00	C
50	0.00	0.00	55.49[b]	17.42	A
	6.36	1.31	48.49	15.18	"
	18.37	3.842	36.71	11.68	"
	31.45	6.665	23.55	7.594	"
	40.80	8.968	15.81	5.288	"
	43.13	9.566	13.87	4.681	A+D
	43.15	9.571	13.85	4.675	"
	43.14	9.569	13.86	4.678	"
	44.21	9.619	11.54	3.821	D
	47.32	9.969	6.20	1.988	"
	50.66	10.25	0.00	0.000	"

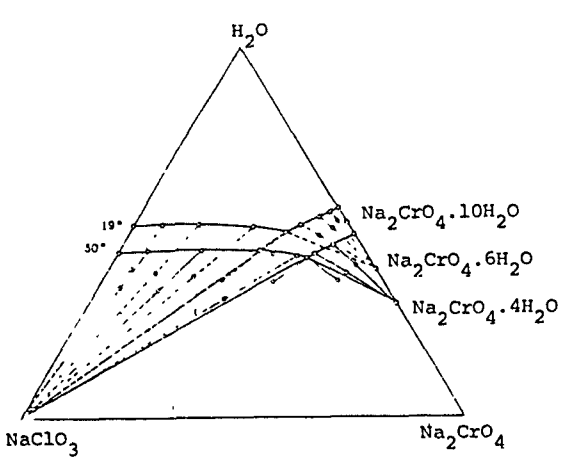
[a] A = $NaClO_3$; B = $Na_2CrO_4.10H_2O$; C = $Na_2CrO_4.6H_2O$; D = $Na_2CrO_4.4H_2O$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 8.770 mol kg^{-1} at 19°C
= 9.417 mol kg^{-1} at 25°C
= 11.71 mol kg^{-1} at 50°C

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Disodium (I-4)-tetraoxomolybdate (2-) (sodium molybdate); Na_2MoO_4; [7631-95-0] (3) Water; H_2O; [7732-18-5	Ricci, J.E.; Linke, W.F. *J. Am. Chem. Soc.* 1947, *69*, 1080-3.
VARIABLES: Composition at 298.15 K	**PREPARED BY:** Hiroshi Miyamoto

EXPERIMENTAL VALUES: Composition of saturated solutions at 25.0°C

Na_2MoO_4 mass %	Na_2MoO_4 mol % (compiler)	$NaClO_3$ mass %	$NaClO_3$ mol % (compiler)	Density g cm^3	Nature of the solid phase[a]
39.38	5.378	0.00	0.00	1.432	A
36.11	4.972	4.23	1.13	1.441	"
32.42	4.509	9.04	2.43	1.441	"
28.53	4.011	14.12	3.840	1.440	"
22.83	3.278	21.94	6.093	1.442	"
17.95	2.643	29.14	8.301	1.453	"
14.59	2.196	34.39	10.02	1.466	"
13.04	1.990	37.05	10.94	1.472	"
11.77	1.817	39.21	11.71	1.478	A+B
11.75	1.814	39.25	11.72	1.479	"
11.81	1.823	39.17	11.70	1.481	"
11.77	1.817	39.21	11.71	1.479	"
11.74	1.813	39.29	11.74	1.476	B
8.87	1.358	41.85	12.40	1.465	"
5.72	0.868	44.70	13.12	1.456	"
2.60	0.392	47.60	13.87	1.438	"
0.00	0.000	50.02[b]	14.49	1.433	"

[a] A = $Na_2MoO_4.2H_2O$; B = $NaClO_3$

[b] For the binary system the compiler computes the following:

soly of $NaClO_3$ = 9.402 mol kg^{-1}

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The solubilities were determined by stirring complexes of known compositions in Pyrex tubes and sampling the equilibrated solutions by means of calibrated pipets fitted with filtering tips.

One sample of saturated solution was analyzed by evaporating and drying to constant weight at 125°C to obtain the combined percentage of the two salts. A second sample was used for the determination of molybdate by precipitation of silver molybdate followed by a Volhard titration of the excess silver in the filtrate.

SOURCE AND PURITY OF MATERIALS:

C.p. grade sodium molybdate dihydrate was used. The salt was completely dehydrated by heating at 180°C, and stored at 150°C. The purity of this anhydrous salt was found to be 100 %. C.p. grade sodium chlorate was found to be pure within 1/1000 by reduction to chloride and the determination of the chloride by the Volhard method.

ESTIMATED ERROR:

Soly: nothing specified.

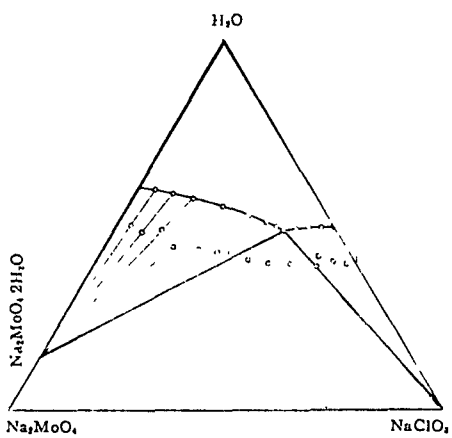
Temp: precision ± 0.04 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Disodium (I-4)-tetraoxomolybdate (2-) (sodium molybdate); Na_2MoO_4; [7631-95-0] (3) Water; H_2O; [7735-18-5]	Ricci, J.E.; Linke, W.F. *J. Am. Chem. Soc.* 1947, *69*, 1080-3.

COMMENTS AND/OR ADDITIONAL DATA:

The phase diagram is given below (based on mass % units).



AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
	ESTIMATED ERROR:
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6] (2) Calcium nitrate; $Ca(NO_3)_2$; [10124-37-5] (3) Water ; H_2O ; [7732-18-5]	Musaev, N.Yu.; Tukhtaev, S.; Shammasov, R.E.; Kucharov, Kh. *Zh. Neorg. Khim.* 1984, 29, 1342-4; *Russ. J. Inorgan. Chem. (Engl. Transl.)* 1984, 29, 770-1.
VARIABLES: T/K = 228 - 323 Composition	**PREPARED BY:** Mark Salomon

EXPERIMENTAL VALUES:

	$NaClO_3$		$Ca(NO_3)_2 \cdot 4H_2O$	$Ca(NO_3)_2$[a]		
t/°C	mass %	mole %	mass %	mass %	mole %	solid phase composition[b]
-18.5	41.9	10.08	---	---	---	ice + A
-19.5	36.2	9.622	10.1	7.018	1.210	"
-19.9	34.5	9.22_5	13.0	9.033	1.567	"
-21.0	30.0	8.178	21.0	14.592	2.580	"
-44.4	18.5	5.857	50.4	35.020	7.193	"
-28.7	---	---	62.1	43.15	7.692	ice + B
-34.4	8.9	2.607	56.3	39.12	7.433	"
-44.6	18.6	5.88_5	50.2	34.881	7.159	ice + A + B
-6.0	18.6	6.163	54.1	37.591	8.079	"
11.8	18.0	6.860	65.7	45.651	11.286	"
25.2	17.2	7.346	74.5	51.766	14.342	"

[a] Calculated by the compiler.

[b] Solid phases: A = $NaClO_3$; B = $Ca(NO_3)_2 \cdot 4H_2O$

For the binary $NaClO_3$-H_2O systems, the compiler computes the following:

soly $NaClO_3$ at -18.5°C = 6.775 mol kg^{-1}

soly $NaClO_3$ at -28.7°C = 4.626 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

"Visual-polythermal" method used: i.e. probably the synthetic method (compiler).

The original publication contains a phase diagram. In the temperature range studied, neither solid solutions nor new compounds are formed: i.e. the systems are of the simple eutonic type.

SOURCE AND PURITY OF MATERIALS:

"C.p." grade $NaClO_3$ and $Ca(NO_3)_2$ were recrystallized two times. No other information was given.

ESTIMATED ERROR:

Nothing specified.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Silver chlorate; $AgClO_3$; [7783-92-8] (3) Water; H_2O; [7732-18-5]	Ricci, J. E.; Offenbach, J. A. *J. Am. Chem. Soc.* 1951, 73, 1597-9.
VARIABLES: T/K = 298 Composition	**PREPARED BY:** H. Miyamoto

EXPERIMENTAL VALUES:

The equilibrium results for the ternary system $AgClO_3$-$NaClO_3$-H_2O are given.

Composition of Saturated Solutions

mass % $NaClO_3$	mol % $NaClO_3$ (compiler)	mass % $AgClO_3$	mol % $AgClO_3$ (compiler)	Nature of solid phase*
0.00	0	14.46	1.567	$AgClO_3$
8.11	1.630	10.02	1.121	SSI
17.49	3.762	7.48	0.895	SSI
27.53	6.463	5.56	0.726	SSI
34.39	8.610	4.23	0.589	SSI
41.78	11.276	2.85	0.428	SSI
46.57	13.275	2.14	0.339	SSI + SSII
46.54	13.263	2.15	0.341	SSI + SSII
46.55	13.268	2.15	0.341	SSI + SSII
47.52	13.628	1.66	0.265	SSII
49.23	14.220	0.56	0.090	SSII
50.04	14.495	0.00	0	$NaClO_3$

*SSI = ∿37% $NaClO_3$ in solid phase
SSII = ∿26% $AgClO_3$ in solid phase

The compiler calculates the solubility of $AgClO_3$ in water as 0.755_8 mol kg^{-1}, and the solubility of $NaClO_3$ as 9.410 mol kg^{-1}.

continued.....

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Ternary mixtures, $AgClO_3$-$NaClO_3$-H_2O, of known composition were allowed to come to equilibrium at 25°C after two weeks of stirring. The results were unchanged after 1 to 3 weeks of further stirring. The saturated liquid solution was filtered and sampled for analysis. One sample was titrated for silver with standard KSCN solution and one was evaporated to dryness at 110-125°C, for total salt content whereupon $NaClO_3$ was calculated by difference.

SOURCE AND PURITY OF MATERIALS:

$AgClO_3$ was made from C.P. $AgNO_3$ and C.P. $NaClO_3$. After three recystallizations, the product was 99.72 % pure (on the basis of gravimetric determination of silver as AgCl after reduction with $NaNO_3$ in the presence of some NaCl).

ESTIMATED ERROR:

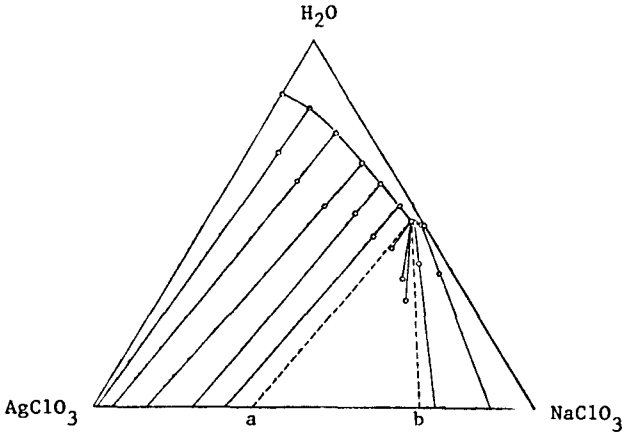
Nothing specified in original article.
Solubility: ± 0.03 mass % (compiler).
Temp: precision probably better than ± 0.1 K (compiler).

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9]	Ricci, J. E.; Offenbach, J. A.
(2) Silver chlorate; $AgClO_3$; [7783-92-8]	*J. Am. Chem. Soc.* 1951, 73, 1597-9.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES: (Continued)

The phase diagram is presented below.



The limiting compositions of SSI and SSII are estimated as ∿37 mass % $NaClO_3$ in SSI and ∿26 mass % $AgClO_3$ in SSII. The composition of the isothermally invariant liquid saturated with these two limiting solid solutions is 2.15 mass % $AgClO_3$ and 46.55 mass % $NaClO_3$.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Sodium chlorate; $NaClO_3$; [7775-09-9] (2) Urea; CH_4N_2O; [57-13-6] (3) Water; H_2O; [7732-18-5]	Nabiev, M.N.; Tukhtaev, S.; Musaev, N.Yu.; Kuchrov, Kh.; Shammasov, R.E. *Zh. Neorg. Khim.* 1982, *27*, 2704-6; *Russ. J. Inorg. Chem.* (*Engl. Transl.*) 1982, *27*, 1533-4.
VARIABLES: T/K = 248.4 to 354.8 Composition	**PREPARED BY:** Hiroshi Miyamoto and Mark Salomon

EXPERIMENTAL VALUES: Composition of saturated solutions

t/°C	Urea mass %	Urea mol % (compiler)	Sodium Chlorate mass %	Sodium Chlorate mol % (compiler)	Nature of the solid phase[a]
-11.2	32.0	12.4	-	-	I+A
-15.8	28.9	12.8	14.2	3.54	"
-24.8	21.5	11.0	31.5	9.07	"
-18.5	-	-	41.9[b]	10.9	I+B
-22.0	12.9	6.29	35.4	9.73	"
-25.2	21.0	10.7	32.0	9.22	I+A+B
-13.5	27.1	14.9	32.0	9.95	A+B
2.2	34.0	20.6	32.0	10.9	"
29.8	46.3	33.9	32.1	13.3	"
48.0	54.2	46.0	32.2	15.4	"
81.6	65.7	77.2	34.3	22.8	"

[a] I = Ice; A = $CO(NH_2)_2$; B = $NaClO_3$.

[b] For the binary system at - 18.5°C the compiler computes the following:

soly of $NaClO_3$ = 6.78 mol kg^{-1}

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:
The method of isothermal sections was used. Eight internal sections were employed. No other information given.

SOURCE AND PURITY OF MATERIALS:
"Chemically pure" grade potassium chlorate and urea were twice recrystallized from water. No other information given.

ESTIMATED ERROR:
Nothing specified.