COMPONENTS:	EVALUATOR:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May 1985

CRITICAL EVALUATION:

Table III, contd.

$Na_2HPO_4 \cdot 2H_2O$

T/K	mole fraction	mole/kg	mass%
321.6	0.092892	5.69	44.71
323.2	0.092657	5.67	44.64
328.2	0.093014	5.70	44.75
333.2	0.094587	5.80	45.20
338.2	0.097088	5.97	45.92
343.2	0.10026	6.19	46.81
348.2	0.10386	6.44	47.78
353.2	0.10762	6.70	48.78
358.2	0.11126	6.95	49.72
363.2	0.11451	7.18	50.52
368.2	0.11707	7.36	51.15
373.2	0.11865	7.48	51.53

298 K. In the articles by Makin and his co-workers (18, 19, 23-26), data for the solubility of Na_2HPO_4 in water are also included and these form a consistent set of data. Furthermore, the data in these articles may be compared with respect to the composition of solutions saturated with respect to two salts, but in one of these reports (26) the headings "$NaNO_3$" and "NaCl" for two of the columns appear to have been interchanged. It appears also that some incorrect constants have been used in calculating the mol% values in this paper. The evaluator was unable to reproduce these calculations.

No solid solutions or ternary compounds were found in the Na_2HPO_4-$MgHPO_4$-H_2O system at 298 K (17) but potassium sodium hydrogen phosphate, $NaKHPO_4 \cdot 5H_2O$ [14518-27-5] was observed in the Na_2HPO_4-K_2HPO_4-H_2O system at 273 and 298 K (16), and sodium ammonium hydrogenphosphate, $NaNH_4HPO_4$ [13011-54-6] was found to be present in the Na_2HPO_4-$(NH_4)_2HPO_4$-H_2O system at 298 K (14). The latter compound was also observed in the quaternary system $2Na^+$, $2NH_4^+||HPO_4^{2-}$, Cl^--H_2O at 273 and 298 K (27). However, the data in this report (27) are at variance with those of Platford (14) with respect to the composition of solutions saturated with both $NaNH_4HPO_4$ and $Na_2HPO_4 \cdot 12H_2O$ as well as with those saturated with both $NaNH_4HPO_4$ and $(NH_4)_2HPO_4$. The data in (27) also disagree with those of Makin (24) with respect to the composition of the eutonic solution of the Na_2HPO_4-NaCl-H_2O system at 298 K. The values for the Na_2HPO_4 content in the work of Lauffenburger and Brodsky (27) seem to have a large negative systemtic error.

Values have been reported for three systems having an organic component. Ferroni, et al. (28) report values for the Na_2HPO_4-CH_3COCH_3-H_2O system and for two sections through the Na_2HPO_4-$NaClO_4$-CH_3COCH_3-H_2O system at 298 K. Bruder, et al. (29) report solubility data for the Na_2HPO_4-CH_3OH-H_2O system at 333 K. All three systems are characterized by limited miscibility.

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May 1985

CRITICAL EVALUATION:

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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Water; H_2O; [7732-18-5]	Shiomi, Ts. *Mem. Col. Sci. Emp. (Kyoto)* **1908**, *1*, 406-13.
VARIABLES: Composition and temperature.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility of Na_2HPO_4 in water.

t/°C	concn[a]	mean	mass%[b]	mol/kg[b]	t/°C	concn[a]	mean	mass%[b]	mol/kg[b]
0.65	1.74		1.71	0.12	30.21	20.80		17.22	1.46
0.65	1.74	1.74	1.71	0.12	30.21	20.76	20.81	17.19	1.46
0.65	1.74		1.71	0.12	30.21	20.88		17.27	1.47
10.26	3.55		3.43	0.25	30.26	21.60		17.76	1.52
10.26	3.54	3.55	3.42	0.25	30.26	21.62		17.78	1.52
10.36	3.58		3.46	0.25	30.26	21.56		17.74	1.52
10.36	3.59		3.46	0.25	30.26	21.55		17.73	1.52
10.36	3.58	3.58	3.46	0.25	30.26	21.56	21.59	17.74	1.52
10.36	3.58		3.46	0.25	30.26	21.61		17.77	1.52
15.11	5.23		4.97	0.37	30.26	21.60		17.76	1.52
15.11	5.22	5.23	4.96	0.37	30.26	21.59		17.76	1.52
20.24	7.88		7.30	0.55	30.26	21.59		17.76	1.52
20.24	7.90	7.89	7.32	0.56	30.76	23.42		18.98	1.65
20.24	7.89		7.31	0.56	30.76	23.40	23.41	18.96	1.65
20.24	7.89		7.31	0.56	30.76	23.41		18.97	1.65
25.15	12.03		10.74	0.85	33.04	30.88		23.59	2.17
25.15	12.01	12.02	10.72	0.84	33.04	30.88	30.88	23.59	2.17
25.15	12.01		10.72	0.84	33.14	31.39		23.89	2.21
25.40	12.32		10.97	0.87	33.14	31.37	31.38	23.88	2.21
25.40	12.34	12.32	10.98	0.87	36.27	45.36		31.20	3.19
25.40	12.31		10.96	0.86	36.27	45.35		31.20	3.19
25.50	12.42		11.05	0.87	36.27	45.34		31.20	3.19
25.50	12.41	12.43	11.04	0.87	36.27	45.38		31.21	3.19
25.50	12.47		11.09	0.88	36.27	45.39	45.37	31.22	3.19

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Equilibrium was approached from both supersaturation and undersaturation. Samples of saturated solution were weighed, evaporated to dryness and heated strongly to form the pyrophosphate. The solubility was calculated from the weight of the pyrophosphate formed.

SOURCE AND PURITY OF MATERIALS:

The Na_2HPO_4 was recrystallized twice.

ESTIMATED ERROR:

The temperature was kept constant within 0.1 K (0.6 K above 90°).

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4]	Shiomi, Ts.
(2) Water; H_2O; [7732-18-5]	*Mem. Col. Sci. Emp. (Kyoto)* 1908, *1*, 406-13.

EXPERIMENTAL VALUES cont'd:

Solubility of Na_2HPO_4 in water.

t/°C	concn[a]	mean	mass%[b]	mol/kg[b]	t/°C	concn[a]	mean	mass%[b]	mol/kg[b]
36.27	45.36		31.20	3.19	55.17	81.37		44.86	5.72
36.27	45.41		31.23	3.19	55.17	81.43	81.40	44.88	5.73
36.27	45.36		31.20	3.19	55.27	81.61		44.94	5.74
36.27	45.35		31.20	3.19	55.27	81.66	81.64	44.95	5.74
37.27	47.56		32.23	3.34	60.23	83.01		45.36	5.84
37.27	47.48		32.19	3.34	60.23	83.02	83.00	45.36	5.84
37.27	47.46		32.18	3.34	60.23	82.98		45.35	5.84
37.27	47.53	47.52	32.22	3.34	70.26	88.10		46.84	6.20
37.27	47.56		32.23	3.34	70.26	88.17	88.11	46.86	6.20
37.27	47.48		32.19	3.34	70.26	88.07		46.83	6.20
37.27	47.49		32.20	3.34	80.39	94.74		48.65	6.66
37.27	47.56		32.23	3.34	80.39	94.83	94.78	48.67	6.67
40.29	54.95		35.46	3.86	80.39	94.76		48.65	6.67
40.29	54.86		35.42	3.86	89.74	102.85		50.70	7.23
40.29	54.95		35.46	3.86	89.74	102.89	102.87	50.71	7.24
40.29	54.83	54.88	35.41	3.86	94.75	107.31		51.76	7.55
40.29	54.85		35.42	3.86	94.75	107.37	107.34	51.78	7.55
40.29	54.88		35.43	3.86	94.75	107.34		51.77	7.55
45.14	68.67		40.71	4.83	95.86	107.08		51.71	7.53
45.14	68.68	68.64	40.72	4.83	95.86	107.09	107.09	51.71	7.53
45.14	68.61		40.69	4.83	96.86	104.94		51.20	7.38
45.14	68.58		40.68	4.82	96.86	105.01	104.98	51.22	7.39
47.23	76.60		43.37	5.39	99.57	101.25		50.31	7.12
47.23	76.55	76.58	43.36	5.38	99.57	101.22	101.21	50.30	7.12
48.23	80.03	80.03	44.45	5.63	99.57	101.16		50.29	7.12
48.33	80.12		44.48	5.64	99.77	102.12		50.52	7.18
48.33	80.17	80.15	44.50	5.64	99.77	102.16	102.15	50.53	7.18
50.22	80.40		44.57	5.66	99.77	102.16		50.53	7.18
50.22	80.34	80.35	44.55	5.65					
50.22	80.32		44.54	5.65					
50.22	80.36		44.56	5.65					

[a] The concentration units are: g/100 g H_2O.

[b] These values were calculated by the compiler.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Water; H_2O; [7732-18-5]	Hammick, D.L.; Goadby, H.K.; Booth, H. *J. Chem. Soc.* 1920, *67*, 1589-92.
VARIABLES:	**PREPARED BY:**
Composition and temperature.	J. Eysseltová

EXPERIMENTAL VALUES:

Solubility of Na_2HPO_4 in water.

	concn Na_2HPO_4			H_2O
t/°C	g/100 g H_2O	mass%[a]	mol/kg[a]	mass%[a]
-0.47	1.45	1.43	0.10	98.57
6.00	2.73	2.66	0.19	97.34
19.95	7.26	6.77	0.51	93.23
22.77	8.93	8.20	0.63	91.80
24.15	9.53	8.70	0.67	91.30
25.75	10.90	9.83	0.77	90.17
27.80	14.16	12.40	1.00	87.60
28.65	15.87	13.70	1.12	86.30
29.05	16.04	13.82	1.13	86.18
29.50	17.18	14.66	1.21	85.34
30.10	19.45	16.28	1.37	83.72
30.90	20.08	16.72	1.41	83.28
32.50	22.57	18.41	1.59	81.57
33.70	24.63	19.76	1.73	80.24
34.70	29.75	22.93	2.09	77.07
36.50	31.15	23.75	2.19	76.25
40.02	35.56	26.23	2.50	73.76

[a] These values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Saturated solutions were prepared by stirring the solid phase with distilled water in an electrically heated thermostat. The saturated solution was siphoned through a glass-wool filter into a weighed bottle. The composition was determined by converting the dissolved phosphate to $Mg_2P_2O_7$.

SOURCE AND PURITY OF MATERIALS:

Arsenic-free $Na_2HPO_4 \cdot 12H_2O$ was recrystallized and used to prepare the other hydrates. The dihydrate was prepared by boiling finely divided dodecahydrate with ethyl alcohol. The heptahydrate was prepared by fusing together an appropriate mixture of the dihydrate and dodecahydrate and cooling.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Water; H_2O; [7732-18-5]	Menzel, G.; Gabler, C. *Z. Anorg. Chem.* 1928, *177*, 187-214.
VARIABLES:	**PREPARED BY:**
Temperature and composition.	J. Eysseltová

EXPERIMENTAL VALUES:

Solubility of Na_2HPO_4 in water.

t/°C	concentration of Na_2HPO_4 in 1000 ml soln		in 1000 g soln		in 1000 g of H_2O	
	mol	gram	mol	gram	mol	gram
0	0.1152	16.37	0.1130	16.05	0.1148	16.31
18	0.4444	63.12	0.4212	59.85	0.4482	63.67
25	0.8399	119.28	0.7625	108.29	0.8551	121.44
-0.48[a]					0.109	15.5

The solid phase was $Na_2HPO_4 \cdot 12H_2O$ [10039-32-4].

[a] This is the cryohydric point.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The apparatus is described elsewhere (1). At 0°C, the equilibrium vessel and sampling pipet were thermostated in an ice-water mixture. Equilibrium was checked by repeated analysis. The Na_2HPO_4 content was determined by titration with 0.1 M HCl using methylorange as indicator (2).	Purest Kahlbaum $Na_2HPO_4 \cdot 12H_2O$ was used.
	ESTIMATED ERROR: The temperature was controlled to ± 0.1 K. The accuracy of the cryohydric temperature is ± 0.01 K.
	REFERENCES: 1. Menzel, H. *Z. Anorg. Allg. Chem.* 1927, *164*, 6. 2. Kolthoff, I. *Massanalyse, II*, p. 139, Berlin, 1928.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Hydrogen peroxide; H_2O_2; [7722-84-1] (3) Water; H_2O; [7732-18-5]	Menzel, H.; Gabler, C. *Z. Anorg. Chem.* 1929, *177*, 187-214.
VARIABLES:	**PREPARED BY:**
Composition at 0°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of Na_2HPO_4 in aqueous H_2O_2 at 0°C.

	H_2O_2		Na_2HPO_4	
mol P:mol O_2^{2-}	g/1000 g soln	mol/1000 g H_2O	g/1000 g soln	mol/1000 g H_2O
1:0	------	-------	16.05	0.1148
1:0.63	2.501	0.0750	16.52	0.1186
1:1.71	7.132	0.2149	17.42	0.1258
1:2.18	9.349	0.2825	17.89	0.1294
1:2.98	12.88	0.3910	18.60	0.1353
1:3.54	16.33	0.4977	19.23	0.1405

The equilibrium solid phase was identified as $Na_2HPO_4 \cdot 12H_2O$ [10039-32-4].

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The method used was described earlier (1). The equilibrium vessel and the sampling pipet were thermostated in an ice-water mixture. The equilibrium was checked by repeated analysis. The Na_2HPO_4 content was determined by titration with 0.1 N HCl using methylorange as indicator (2). The H_2O_2 content was determined by titration with 0.1 N $KMnO_4$.

SOURCE AND PURITY OF MATERIALS:

The $Na_2HPO_4 \cdot 12H_2O$ was the purest Kahlbaum grade. The H_2O_2 was the purest Merck reagent grade.

ESTIMATED ERROR:

The temperature was controlled to within ±0.1 K. No additional information is given.

REFERENCES:

1. Menzel, H. *Z. Anorg. Allg. Chem.* 1927, *164*, 6.
2. Kolthoff, I. *Massanalyse, II*, p. 139, Berlin, 1928.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Dipotassium hydrogenphosphate; K_2HPO_4; [7758-11-4] (3) Water; H_2O; [7732-18-5]	Ravich, M.I.; Popova, Z.V. *Izv. Akad. Nauk SSSR, Ser. Khim.* 1942, 268-75.
VARIABLES: Composition and temperature.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the K_2HPO_4-Na_2HPO_4-H_2O system.

K_2HPO_4		Na_2HPO_4		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	phase
		temp. = 0°C.			
----	----	10.80	0.85	89.20	A
25.57	2.06	3.24	0.32	71.19	"
31.84	2.83	3.66	0.40	64.50	"
35.17	3.32	3.94	0.46	60.89	"
39.41	4.13	5.82	0.75	54.77	A + B
40.83	4.36	5.42	0.71	53.75	B
44.59	5.02	4.38	0.60	51.03	B + C
53.41	7.03	2.98	0.48	43.61	B
55.61	7.69	2.86	0.48	41.53	B + D[c]
55.60	7.70	2.92	0.50	41.48	"
		temp. = 25°C.			
60.66	9.42	2.36	0.45	36.98	D
59.68	9.59	4.60	0.90	35.72	"
57.85	9.49	7.14	1.43	35.01	B + D
54.94	8.43	7.66	1.44	37.40	B
45.31	5.81	9.91	1.56	44.78	"
30.98	3.47	17.80	2.44	51.22	"
29.57	3.30	19.05	2.61	51.38	"
26.64	2.97	21.82	2.98	51.54	B + E
26.61	2.97	22.04	3.02	51.35	E
26.31	2.91	21.76	2.95	51.93	"

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used but no details are given. Equilibrium was reached in one day. Phosphate was determined as $Mg_2P_2O_7$, potassium was determined as $KClO_4$, and sodium was determined as sodium zincuranylacetate after separating out H_3PO_4 with the use of zinc acetate.	The $Na_2HPO_4 \cdot 12H_2O$ and the $K_2HPO_4 \cdot 3H_2O$ were recrystallized.
	ESTIMATED ERROR: No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4]	Ravich, M.I.; Popova, Z.V.
(2) Dipotassium hydrogenphosphate; K_2HPO_4; [7758-11-4]	*Izv. Akad. Nauk SSSR, Ser. Khim.* 1942, 268-75.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Solubility in the K_2HPO_4-Na_2HPO_4-H_2O system.

K_2HPO_4		Na_2HPO_4		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	phase
		temp. = 25°C.			
26.72	2.98	21.84	2.99	51.44	E
26.63	2.95	21.48	2.91	51.89	"
25.84	2.84	22.02	2.97	52.14	"
23.13	2.39	21.40	2.71	55.47	A + E
23.54	2.43	20.78	2.62	55.68	"
23.12	2.41	21.72	2.77	55.16	A
18.80	1.68	16.94	1.85	64.26	"
10.87	0.84	14.46	1.36	74.67	"
6.42	0.46	13.20	1.16	80.38	"
-----	----	10.80	0.85	89.20	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $KNaHPO_4 \cdot 5H_2O$; C = $K_2HPO_4 \cdot 6H_2O$; D = $K_2HPO_4 \cdot 3H_2O$; E = $Na_2HPO_4 \cdot 7H_2O$.

[c] This is a metastable state.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Sodium nitrate; $NaNO_3$; [7631-99-4] (3) Water; H_2O; [7732-18-5]	Makin, A.V.; Karnaukhov, A.S. *Zh. Neorg. Khim.* 1957, 2, 1420-3.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-$NaNO_3$-H_2O system at 25°C.

$NaNO_3$		Na_2HPO_4		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	phase
0	0	10.32	0.81	89.68	A
3.31	0.44	8.71	0.70	87.98	"
7.80	1.08	7.50	0.62	84.70	"
12.03	1.74	6.67	0.58	81.30	"
17.06	2.63	6.51	0.60	76.43	"
21.87	3.58	6.26	0.61	71.87	"
25.67	4.45	6.26	0.66	67.91	A + B
26.01	4.53	6.46	0.67	67.53	"
26.05	4.53	6.33	0.66	67.62	"
26.46	4.62	6.19	0.65	67.35	"
26.08	4.54	6.30	0.66	67.62	"
32.06	5.86	3.57	0.39	64.37	B
36.05	6.86	2.16	0.24	61.79	"
41.72	8.57	1.00	0.12	57.28	"
47.90	10.82	0	0	52.10	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $NaNO_3$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. The time allowed for equilibration was 12 - 45 hours. About 1 - 2 g of liquid and solid phases were sampled simultaneously. The phases were separated from each other by filtration. The phosphate content was determined gravimetrically as $NH_4MgPO_4 \cdot 6H_2O$. The sodium ion content was determined as sodium uranylacetate after removal of the phosphate ion. Nitrate ion content was determined by difference. The water content was determined by drying at 105°C to constant weight.

SOURCE AND PURITY OF MATERIALS:

The Na_2HPO_4 and the $NaNO_3$ were each recrystallized twice.

ESTIMATED ERROR:

No information is given. The compiler estimates the reproducibility to be about 1%.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Sodium chloride; NaCl; [7647-14-5] (3) Water; H_2O; [7732-18-5]	Makin, A.V. *Zh. Neorg. Khim.* 1957, 2, 2794-6.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-NaCl-H_2O system at 25°C.

Na_2HPO_4		NaCl		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	phase
10.32	0.81	----	----	89.68	A
9.26	0.76	5.09	1.02	85.65	"
9.32	0.81	9.48	2.00	81.20	"
9.51	0.89	15.72	3.60	74.77	"
8.50	0.84	19.96	4.77	71.54	A + B
9.67	0.97	20.17	5.01	69.86	"
9.50	0.96	20.99	5.17	69.51	"
9.37	0.94	20.32	4.94	70.31	"
9.12	0.91	20.54	5.00	70.34	"
8.69	0.85	19.67	4.70	71.64	"
5.31	0.52	22.24	5.25	72.45	B
3.01	0.29	23.46	5.46	73.53	"
----	----	26.42	6.14	73.58	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = NaCl.

In addition to the above data, the author also gives the composition of the respective eutonic solution as: 9.14 mass% Na_2HPO_4 (0.91 mol/kg--compiler) 20.33 mass% NaCl (4.93 mol/kg--compiler), and 70.53 mass% water.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. The analyses were done gravimetrically but no details are given.	No information is given.
	ESTIMATED ERROR: No details are given. The compiler estimates the reproducibility of the analyses to be about ± 3%.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Disodium sulfate; Na_2SO_4; [7557-82-6] (3) Water; H_2O; [7732-18-5]	1. Makin, A.V. *Uch. Zapiski Gos. Ped. In-ta* 1959, *30*, 291-6. 2. Druzhinin, I.G.; Makin, A.V. *Izv. Akad. Nauk Kirg. SSR, Ser. Estestv. i Tekhn. Nauk* 1960, *2*, 19-24.
VARIABLES: Composition at 25°C.	PREPARED BY: J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-Na_2SO_4-H_2O system at 25°C.

Na_2SO_4		Na_2HPO_4		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	phase
----	----	10.32	0.81	89.68	A
4.25	0.34	8.90	0.72	86.85	"
7.79	0.65	7.99	0.67	84.22	"
9.82	0.84	7.52	0.64	82.66	"
12.77	1.12	7.38	0.65	74.85	"
15.02	1.37	7.62	0.69	77.36	A + B
15.20	1.38	7.38	0.67	77.43	"
15.03	1.37	7.62	0.69	77.35	"
15.06	1.37	7.48	0.68	77.46	"
15.06	1.37	7.44	0.68	77.50	"
15.04	1.37	7.45	0.68	77.51	"
15.04	1.37	7.54	0.68	77.42	"
16.27	1.47	5.92	0.54	77.81	B
17.83	1.61	4.14	0.37	78.03	"
19.19	1.73	2.70	0.24	78.11	"
21.98	1.98	----	----	78.02	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $Na_2SO_4 \cdot 10H_2O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. The mixtures were placed in a water thermostat and allowed to equilibrate for 3 days. Phosphate content was determined gravimetrically as $Mg_2P_2O_7$, sulfate content was determined gravimetrically as $BaSO_4$, sodium was determined by difference, and the water content was determined by drying at 105° C to constant weight.	Both salts were purified by recrystallization.
	ESTIMATED ERROR: The temperature was controlled to within ± 0.1 K. The compiler estimates that the reproducibility of the analyses was about 0.5%.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Hydrogen peroxide; H_2O_2; [7722-84-1] (3) Water; H_2O; [7732-18-5]	Ukraintseva, E.A. *Izv. Sib. Otd. Akad. Nauk SSSR, Ser. Khim.* 1963, *3*, 14-24.
VARIABLES: Composition at 0°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-H_2O_2-H_2O system at 0°C.

Na_2HPO_4		H_2O_2		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	phase
1.6	0.11	----	----	98.4	A
4.0	0.32	9.2	3.12	86.8	"
11.0	1.21	20.0	8.52	69.0	"
12.2	1.28	20.8	9.12	67.0	"
23.6	3.29	26.0	15.16	50.4	"
24.0	3.38	26.1	15.37	49.9	"
27.3	4.15	26.4	16.76	46.3	"
42.2	9.64	27.0	25.77	30.8	A + B
40.9	9.05	27.3	25.23	31.8	B
38.7	8.95	30.9	29.88	30.4	"
37.5	8.79	32.5	31.84	30.0	"
35.4	9.47	38.3	42.81	26.3	"
35.3	11.04	42.2	55.13	22.5	"
32.9	10.06	44.1	56.36	23.0	"
26.9	9.86	53.9	82.52	19.2	C
26.7	14.23	60.1	133.8	13.2	"
29.1	46.5	66.5	444	4.4	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $Na_2HPO_4 \cdot 1.5H_2O_2$; C = $Na_2HPO_4 \cdot 2.5H_2O_2$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The only information given is that the duration of the experiments was 3 to 14 hours. The composition of the solid phases was determined by the Schreinemakers' method. Hydrogen peroxide content was determined by titration with 0.1 N $KMnO_4$ in solutions containing sulfuric acid. The phosphate was determined gravimetrically as $Mg_2P_2O_7$.

SOURCE AND PURITY OF MATERIALS:

Chemically pure hydrogen peroxide without stabilizers was used. No information is given about the $Na_2HPO_4 \cdot 12H_2O$.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Disodium silicate; Na_2SiO_3; [6834-92-0] (3) Water; H_2O; [7732-18-5]	Manvelyan, M.G.; Galstyan, V.D.; Oganesyan, E.B.; Sayamyan, E.A. *Arm. Khim. Zh.* 1971, *26*, 510-12.
VARIABLES: Composition at 20°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-Na_2SiO_3-H_2O system at 20°C.

Na_2HPO_4		Na_2SiO_3		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	phase
7.2	0.55	0.5	0.04	92.3	A
9.5	0.75	1.2	0.11	89.3	"
11.8	0.96	1.8	0.17	86.4	"
12.5	1.04	2.9	0.28	84.6	"
15.3	1.36	5.3	0.55	79.4	"
15.1	1.38	8.1	0.86	76.8	B
14.9	1.42	11.5	1.28	73.6	"
9.0	0.83	14.5	1.55	76.5	"
7.9	0.74	16.5	1.79	75.6	"
4.8	0.44	18.9	2.03	76.3	"
4.9	0.46	20.5	2.25	74.7	C
2.5	0.23	21.5	2.32	76.0	"
2.5	0.23	20.0	2.11	77.5	"
1.9	0.17	20.1	2.11	78.0	"

[a] These values were calculated by the compiler.

[b] The solid phases are A = $Na_2HPO_4 \cdot 12H_2O$; B = $Na_3PO_4 \cdot 12H_2O$; C = $Na_2SiO_3 \cdot 9H_2O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. A month was allowed for equilibration. No details about the apparatus or the analytical methods are given.

SOURCE AND PURITY OF MATERIALS:

Reagent grade $Na_2HPO_4 \cdot 12H_2O$ and $Na_2SiO_3 \cdot 9H_2O$ were used.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Magnesium hydrogenphosphate; $MgHPO_4$; [7757-86-0] (3) Water; H_2O; [7732-18-5]	Dudakov, V.G.; Shternina, E.B. *VINITI Nr. 469-74*, 1974.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the $MgHPO_4$-Na_2HPO_4-H_2O system at 25°C.

$10^5 C_{Mg}$	$10^3 C_{2Na}$	$10^3 C_{HPO_4}$	$MgHPO_4$[a]	Na_2HPO_4[a]	H_2O[a]		solid[b]
g ion/1000 g H_2O			mass%	mass%	mass%	pH	phase
802	----	8.02	0.096	----	99.90	6.98	A
543	32.4	37.78	0.065	0.46	99.48	8.19	"
421	79.8	84.02	0.050	1.12	98.83	8.86	"
277	159	162.2	0.032	2.21	97.76	9.23	"
338	310	313.0	0.038	4.22	95.74	9.24	"
553	527	532.6	0.061	6.96	92.97	9.23	"
741	665	672.1	0.081	8.63	91.29	9.26	"
821	726	733.9	0.089	9.35	90.56	9.36	"
1070	817	827.9	0.115	10.39	89.49	9.35	A + B
994	811	820.9	0.107	10.33	89.57	9.35	B
849	814	822.7	0.091	10.36	89.55	9.36	"
594	820	826.4	0.063	10.43	89.50	9.33	"
321	828	830.7	0.034	10.53	89.44	9.36	"
220	825	826.9	0.023	10.49	89.48	9.35	"
---	834	833.5	-----	10.60	89.40	9.36	"

[a] These values were calculated by the compiler using the authors' values for the ionic concentrations.

[b] The solid phases are: A = $MgHPO_4 \cdot 3H_2O$; B = $Na_2HPO_4 \cdot 12H_2O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Equilibrium was checked refractometrically and by repeated analysis. No details are given about the apparatus or the sampling. Magnesium was determined gravimetrically as pyrophosphate, by complexiметric titration, or colorimetrically. Sodium was determined by flame photometry. Phosphate was determined gravimetrically as magnesium pyrophosphate or as ammonium phosphomolybdate. Water was determined by drying the sample at a temperature a little above its dehydration temperature or over concentrated H_2SO_4. The solid phases were identified by Schreinemakers' method, crystallooptically, and roentgenographically.

SOURCE AND PURITY OF MATERIALS:

The $MgHPO_4 \cdot 3H_2O$ was synthesized from $MgCO_3$ and H_3PO_4. Other experimental details are given in ref. (1).

ESTIMATED ERROR:

No information is given.

REFERENCES:

1. Vorob'ev, G.I.; Rykova, G.A.; Shternina, E.B. *Zh. Neorg. Khim.* 1970, *15*, 2644.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Disodium ethylenediaminetetraacetate; $C_{10}H_{14}O_8Na_2$; [139-33-3] (3) Water; H_2O; [7732-18-5]	Dudakov, V.G.; Shternina, E.B. *VINITI Nr. 469-74* 1974.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the NaH_2EDTA-Na_2HPO_4-H_2O system at 25°C.

H_2EDTA^{2-}	HPO_4^{2-}	2 Na^+	Na_2H_2EDTA	Na_2HPO_4	H_2O		
(g ion/1000 g H_2O)			mass%[a]	mass%[a]	mass%[a]	pH	solid phase[b]
0.3083	----	0.308	10.29	----	89.71	4.35	A
0.3168	0.2793	0.596	10.19	3.43	86.38	4.58	"
0.3221	0.4642	0.786	10.11	5.56	84.32	4.82	"
0.3221	0.5799	0.902	9.97	6.86	83.17	4.87	"
0.3309	0.7872	1.12	9.97	9.06	80.97	5.02	"
0.3564	0.9237	1.28	10.50	10.39	79.11	5.25	A + B
0.3194	0.9022	1.22	9.53	10.28	80.18	7.08	B
0.2412	0.8972	1.15	7.38	10.48	82.15	7.89	"
0.1773	0.8793	1.06	5.54	10.50	83.96	8.68	"
0.1232	0.8828	1.01	3.92	10.71	85.37	8.94	"
0.0501	0.8498	0.851	1.64	10.60	87.76	9.27	"
----	0.8335	0.834	----	10.59	89.41	9.33	"

[a] These values were calculated by the compiler and were based on the concentration values given by the authors.

[b] The solid phases are: A = $Na_2H_2EDTA \cdot 2H_2O$; B = $Na_2HPO_4 \cdot 12H_2O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. Equilibrium was checked refractometrically and by repeated analysis. Sodium was determined by flame photometry, EDTA was determined by retitration using $Bi(NO_3)_3$, phosphate was determined gravimetrically as magnesium diphosphate or as ammonium phosphomolybdate, depending on its expected concentration. Water content was determined by drying the sample at a temperature slightly above that for the dehydration of the respective hydrate, or over H_2SO_4. The composition of the solid phases was determined by the Schreinemakers' method and crystallo-optically and roentgenographically.	This has been described elsewhere (1).
	ESTIMATED ERROR: No information is given.
	REFERENCES: 1. Vorob'ev, G.I.; Rykova, G.A.; Shternina, E.B. *Zh. Neorg. Khim.* 1970, *15*, 2644.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Diammonium hydrogenphosphate; $(NH_4)_2HPO_4$; [7783-28-0] (3) Water; H_2O; [7732-18-5]	Platford, R.F. *J. Chem. Eng. Data* 1974, *19*, 166-8.
VARIABLES:	**PREPARED BY:**
Composition at 25°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-$(NH_4)_2HPO_4$-H_2O system at 25°C.

Na_2HPO_4		$(NH_4)_2HPO_4$		solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	phase
10.4	0.82	0.00	0.00	A
12.3	1.01	2.0	0.18	"
16.0	1.39	3.3	0.31	A + B
15.6	1.38	4.6	0.44	B
13.6	1.19	5.9	0.55	"
11.3	0.97	7.0	0.65	"
10.5	0.92	8.9	0.84	"
9.7	0.88	12.8	1.25	"
9.1	0.84	14.4	1.42	"
8.2	0.78	18.0	1.85	"
8.4	0.83	20.4	2.17	"
8.0	0.85	25.5	2.90	"
7.8	0.90	31.2	3.87	"
8.5	1.16	40.1	5.91	B + C
7.1	0.97	41.3	6.06	C
4.8	0.62	40.8	5.68	"
1.8	0.22	41.3	5.50	"
0.0	0.00	41.5	5.37	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $NaNH_4HPO_4 \cdot 4H_2O$; C = $(NH_4)_2HPO_4$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Conventional measurements were made on aliquots of saturated solutions. The ammonium salt was determined gravimetrically as ammoniumtetraphenylborate (1) and the total salt content was determined by evaporation to constant weight in vacuum over H_2SO_4. The sodium salt was then estimated by difference. The composition of the eutonics was checked by an isopiestic method (2).

SOURCE AND PURITY OF MATERIALS:

The AR grade phosphates were recrystallized once from water. The Na_2HPO_4 was dried at 105°C. The $(NH_4)_2HPO_4$ was dried in vacuum over sulfuric acid at room temperature.

ESTIMATED ERROR:

Nothing is given.

REFERENCES:

1. Vogel, A.I. *Quantitative Inorganic Analysis*, Wiley. New York, 1961, p. 566.
2. Platford, R.F. *Amer. J. Sci.* 1972, *272*, 959.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Boric acid; H_3BO_3; [11113-50-1] (3) Water; H_2O; [7732-18-5]	Beremzhanov, B.A.; Savich, R.F.; Kunanbaeva, G.S. *Prikl. Teor. Khim.* 1978, 8-14.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the Na_2HPO_4-H_3BO_3-H_2O system at 25°C.

Na_2HPO_4			H_3BO_3				refr.	solid[b]
mass%	mol%	mol/kg[a]	mass%	mol%	mol/kg[a]	pH	index	phase
12.00	1.70	0.96	----	----	----	9.93	1.520	A
15.46	2.31	1.33	2.68	0.91	0.52	9.60	1.495	"
16.60	2.32	1.45	3.11	1.00	0.63	----	1.491	"
18.11	2.83	1.63	3.77	1.32	0.78	9.85	-----	"
18.95	2.92	1.74	4.46	1.59	0.94	9.47	1.487	"
20.43	3.10	1.91	4.38	1.59	0.94	----	-----	"
20.82	3.24	1.97	4.86	1.79	1.06	9.56	1.480	"
23.82	2.83	2.38	5.84	2.24	1.34	9.44	1.477	A + B
19.81	3.01	1.90	6.68	2.50	1.47	9.19	1.464	B
19.44	2.99	1.85	6.76	2.51	1.48	----	1.468	"
17.51	2.76	1.67	8.94	3.31	1.96	8.65	1.453	"
16.28	2.64	1.58	11.30	4.21	2.52	----	-----	"
15.89	2.59	1.57	12.82	4.83	2.91	7.77	1.442	B + C
12.80	1.96	1.15	8.96	3.10	1.85	7.47	1.429	C
11.00	1.61	0.94	6.62	2.24	1.30	----	-----	"
10.08	1.44	0.84	5.75	1.92	1.10	6.18	1.395	"
8.34	1.18	0.68	5.51	1.80	1.03	----	-----	"
5.16	0.69	0.41	5.54	1.75	1.00	5.69	1.382	"
4.24	0.58	0.33	5.37	1.60	1.15	5.32	1.374	"
0	0	0	5.00	1.50	0.85	4.10	1.340	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = Na_2HPO_4; B = $Na_2B_4O_7$; C = H_3BO_3.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The standard isothermal method was used. Two series of experiments were performed. In one series, one component was added to saturated solutions of the other. In the other series, solutions of different concentrations of one component were prepared and the other component was then added to these solutions until saturation. Sodium content was determined by flame photometry, phosphate content was determined gravimetrically and the boric acid was determined by titration. No other details are given.

SOURCE AND PURITY OF MATERIALS:

No information is given.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Diammonium hydrogenphosphate; $(NH_4)_2HPO_4$; [7783-28-0] (3) Sodium chloride; NaCl; [7647-14-5] (4) Ammonium chloride; NH_4Cl; [12125-02-9] (5) Water; H_2O; [7732-18-5]	Lauffenburger, R.; Brodsky, N. *Compt. Rend.* **1938**, *206*, 1383-5.
VARIABLES: Composition and temperature.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Part 1. Composition of the solutions saturated simultaneously by two solids in the $2\ Na^+,\ 2\ NH_4^+||HPO_4^{2-},\ 2\ Cl^- - H_2O$ system.

	Na_2HPO_4		$(NH_4)_2HPO_4$		NaCl		NH_4Cl		
t/°C.	mass%[a]	mol/kg	mass%[a]	mol/kg	mass%[a]	mol/kg	mass%[a]	mol/kg	solid[b] phase
0	----	----	----	----	9.96	4.89	10.20	2.73	C + D
25	----	----	----	----	17.61	4.41	14.07	3.85	"
0	----	----	25.58	3.47	-----	----	18.58	6.22	B + D
25	----	----	12.97	1.53	-----	----	22.84	6.65	"
0	0.80	0.08	29.08	3.14	-----	----	-----	----	B + E
25	1.17	0.14	39.96	5.14	-----	----	-----	----	"
0	3.23	0.25	5.77	0.48	-----	----	-----	----	A + E
25	11.90	1.00	3.68	0.33	-----	----	-----	----	"
0	9.54	1.00	-----	----	23.39	5.95	-----	----	A + C
25	5.06	0.50	-----	----	23.72	5.70	-----	----	"

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. Four days were allowed for equilibration. Phosphate, chloride and ammonia were analyzed. Sodium and water were determined by difference.	All materials were "pur." grade.
	ESTIMATED ERROR: The temperature was constant to within ± 0.05 K.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Diammonium hydrogenphosphate; $(NH_4)_2HPO_4$; [7783-28-0] (3) Sodium chloride; NaCl; [7647-14-5] (4) Ammonium chloride; NH_4Cl; [12125-02-9] (5) Water; H_2O; [7732-18-5]	Lauffenburger, R.; Brodsky, N. *Compt. Rend.* 1938, *206*, 1383-5.

EXPERIMENTAL VALUES cont'd:

Part 2. Composition of solutions saturated simultaneously by three solid phases in the 2 Na^+, 2 NH_4^+ || HPO_4^{2-}, 2 Cl^--H_2O system.

	Na^+		NH_4^+		HPO_4^{2-}		Cl^-		
t/°C.	mass%[a]	mol/kg	mass%[a]	mol/kg	mass%[a]	mol/kg	mass%[a]	mol/kg	solid phases[b]
0	7.83	4.90	3.32	2.80	0.53	0.08	18.65	7.55	C + D + E
25	6.62	4.34	5.28	4.67	1.47	0.23	20.15	8.55	"
25	10.57	6.51	0.48	0.40	3.12	0.46	15.03	5.99	A + C + E
0	0.43	0.30	10.64	10.1	15.76	2.65	11.20	5.1	B + C + E
25	0.67	0.45	9.97	9.04	10.21	1.64	14.28	6.21	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = Na_2HPO_4; B = $(NH_4)_2HPO_4$; C = NaCl; D = NH_4Cl; E = $NH_4NaHPO_4 \cdot 4H_2O$.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Sodium chloride; NaCl; [7647-14-5] (3) Sodium nitrate; $NaNO_3$; [7631-99-4] (4) Water; H_2O; [7732-18-5]	Makin, A.V. *Zh. Neorg. Khim.* 1958, 3, 2764-6.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Points of simultaneous crystallization of two or three solid phases in the $NaNO_3$-Na_2HPO_4-NaCl-H_2O system at 25°C.

$NaNO_3$[a]		Na_2HPO_4		NaCl[a]		
mass%	conc[b]	mass%	conc[b]	mass%	conc[b]	solid phases[c]
20.32	68.00	9.17	31.10	----	----	A + B
18.17	54.72	7.93	23.80	7.10	21.48	"
17.21	48.64	7.70	21.90	10.47	29.46	"
14.85	40.36	7.18	19.48	14.80	40.16	"
13.20	35.44	6.63	17.82	17.42	46.74	"
11.43	29.52	6.26	16.20	21.04	54.28	"
9.61	23.97	5.73	14.28	24.78	61.75	"
8.05	19.30	5.66	13.59	27.97	67.11	A + B + C
-----	-----	6.34	19.60	26.05	80.40	B + C
1.95	5.32	5.95	17.18	27.30	77.50	"
3.70	8.28	5.81	16.42	27.91	75.30	"
5.81	13.80	5.71	14.78	28.10	71.42	"
8.05	19.30	5.64	13.61	27.99	67.07	A + B + C
12.31	28.75	----	-----	30.51	71.25	A + C
10.50	24.61	1.78	4.18	30.38	71.21	"
9.33	22.10	2.90	6.89	29.98	71.01	"
8.47	19.80	4.71	10.30	28.70	69.90	"
8.05	19.30	5.63	13.57	27.94	67.13	A + B + C

[a] These are probably incorrect headings--see the critical evaluation.

[b] The concentration units are: mol/100 mol of solute.

[c] The solid phases are: A = NaCl; B = $Na_2HPO_4 \cdot 12H_2O$; C = $NaNO_3$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The method of invariant points was used. To a solution saturated with two salts, a third salt was added until ternary eutonic equilibrium was reached. Analyses were made gravimetrically: the hydrogenphosphate ion was precipitated as NH_4MgPO_4; sodium was precipitated as sodium zinc uranylacetate after removing the phosphate. The nitrate ion content was determined by difference.

SOURCE AND PURITY OF MATERIALS:

No details are given.

ESTIMATED ERROR:

No details are given. The compiler considers the reproducibility to be about ± 0.1%.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Disodium sulfate; Na_2SO_4; [7757-82-6] (3) Sodium nitrate; $NaNO_3$; [7631-99-4] (4) Water; H_2O; [7732-18-5]	Makin, A.V.; Lepeshkov, I.N. *Zh. Neorg. Khim.* 1964, 9, 495-8.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Part 1. Points of simultaneous crystallization of two or three solid phases in the $NaNO_3$-Na_2HPO_4-Na_2SO_4-H_2O system at 25°C.

soln. no.	Na_2SO_4		Na_2HPO_4		$NaNO_3$		H_2O	solid[b] phase
	mass%	mol%[a]	mass%	mol%[a]	mass%	mol%[a]	mol%[a]	
1	15.07	66.72	7.52	33.28	----	----	2767.3	A + B
2	14.03	54.40	6.92	26.81	2.85	18.79	2325.8	"
3	13.54	48.19	6.90	24.54	4.56	27.27	2104.8	"
4	13.39	45.12	6.86	23.16	5.65	31.72	1969.9	"
5	12.32	36.13	6.83	19.99	8.95	43.88	1662.5	"
6	12.35	32.48	6.63	17.44	11.52	50.08	1234.5	"
7	12.02	28.47	6.49	15.29	14.29	56.24	1248.9	"
8	10.96	23.49	6.07	13.07	17.67	63.44	1106.7	A + B + C
9	10.06	20.67	6.04	10.91	20.50	68.42	1027.3	"
10	8.84	16.53	5.50	10.26	23.46	73.21	901.9	"[c]
11	6.53	12.05	4.55	8.41	27.52	79.54	905.1	"
12	5.25	8.95	4.10	6.97	29.65	84.08	817.2	"
13	4.99	7.96	3.76	6.01	32.35	86.03	742.0	A + C + D
14	14.94	28.67	----	----	22.24	71.33	952.6	B + C
15	13.98	27.45	1.25	2.45	21.39	70.10	980.5	"
16	13.99	27.57	2.72	5.36	20.37	67.07	950.4	"
17	11.81	24.9	4.00	8.16	19.88	67.75	1035.0	"
18	11.28	23.8	5.43	11.46	18.37	64.74	1080.5	"
19	11.22	23.87	5.65	12.03	18.09	64.10	1093.0	"
20	10.99	23.61	6.04	12.97	17.67	63.42	1106.7	A + B + C
21	5.02	6.42	----	-----	43.75	93.58	517.5	C + D
22	5.01	7.12	1.83	2.60	37.96	90.28	619.9	"
23	5.04	7.58	3.06	4.59	34.96	87.83	677.7	"

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The method of invariant points was used. At least 6 days were allowed for equilibration. All analyses were done gravimetrically; phosphate was determined as $NH_4MgPO_4 \cdot 6H_2O$; sulfate as $BaSO_4$; sodium as zinc uranylacetate. Water and nitrate contents were determined by difference.	No information is given.
	ESTIMATED ERROR: No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Disodium sulfate; Na_2SO_4; [7757-82-6] (3) Sodium nitrate; $NaNO_3$; [7631-99-4] (4) Water; H_2O; [7732-18-5]	Makin, A.V.; Lepeshkov, I.N. *Zh. Neorg. Khim.* 1964, 9, 495-8.

EXPERIMENTAL VALUES cont'd:

Part 1. Points of simultaneous crystallization of two or three solid phases in the $NaNO_3$-Na_2HPO_4-Na_2SO_4-H_2O system at 25°C.

soln. no.	Na_2SO_4 mass%	Na_2SO_4 mol%[a]	Na_2HPO_4 mass%	Na_2HPO_4 mol%[a]	$NaNO_3$ mass%	$NaNO_3$ mol%[a]	H_2O mol%[a]	solid phase[b]
24	4.99	7.96	3.76	6.01	32.35	86.03	742.0	A + C + D
25	----	----	6.34	12.76	26.05	87.24	1089.1	A + D
26	1.39	2.44	5.74	10.06	29.87	87.50	871.5	"
27	3.19	5.25	5.05	8.52	30.88	86.23	803.0	"
28	4.22	6.94	4.46	7.31	31.20	85.72	780.0	"
29	4.99	7.96	3.76	6.01	32.35	86.03	742.0	A + C + D

[a] This should be: mol/100 mol of solute--compiler.

[b] The solid phases are: A = $Na_2HPO_4 \cdot 12H_2O$; B = $Na_2SO_4 \cdot 10H_2O$; C = $NaNO_3 \cdot Na_2SO_4 \cdot H_2O$; D = $NaNO_3$.

[c] This is an obvious error: the compiler suggests that the correct phases are A + C.

Part 2. The compiler has calculated the following values from the data in Part 1.

soln. no.	Na_2SO_4 mol/kg	Na_2HPO_4 mol/kg	$NaNO_3$ mol/kg	H_2O mass%
1	1.37	0.68	----	77.41
2	1.30	0.64	0.44	76.20
3	1.25	0.64	0.71	75.15
4	1.27	0.65	0.90	74.10
5	1.21	0.67	1.46	71.90
6	1.25	0.67	1.95	69.50
7	1.26	0.68	2.50	67.20
8	1.18	0.65	3.18	65.30
9	1.12	0.67	3.80	63.40
10	1.00	0.62	4.44	62.20
11	0.75	0.52	5.27	61.40
12	0.60	0.47	5.72	61.00
13	0.60	0.45	6.46	58.90
14	1.67	----	4.16	62.82
15	1.55	0.14	3.97	63.38
16	1.56	0.30	3.81	62.92
17	1.29	0.44	3.64	64.31
18	1.22	0.59	3.33	64.92
19	1.21	0.61	3.27	65.04
20	1.18	0.65	3.18	65.30
21	0.69	----	10.05	51.23
22	0.64	0.23	8.09	55.20
23	0.62	0.38	7.22	56.94
24	0.60	0.45	6.46	58.90
25	----	0.66	4.53	67.61
26	0.16	0.64	5.58	63.00
27	0.37	0.58	5.97	60.88
28	0.49	0.52	6.10	60.12
29	0.60	0.45	6.46	58.90

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) 2-Propanone (acetone); C_3H_6O; [67-64-1] (3) Water; H_2O; [7732-18-5]	Ferroni, G.; Galea, J.; Antonetti, G. *Bull. Soc. Chim. Fr.* 1974, *12*, Pt. 1, 273-81.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

A miscibility gap was found in the system. The following data are for the isothermal binodal curve at 25°C.

upper layer				lower layer				
density g/cm^3	Na_2HPO_4 mass%	C_3H_6O mass%	H_2O mass%	density g/cm^3	Na_2HPO_4 mass%	C_3H_6O mass%	H_2O mass%	solid phase[a]
0.7922	~ 0	100	0	----	----	----	----	A
0.793	$\sim 10^{-7}$	95.60	4.40	----	----	----	----	B
0.821	$\sim 10^{-6}$	84.30	15.70	----	----	----	----	"
0.8331	$\sim 10^{-6}$	75.79	24.21	1.328	40.02	1.24	58.74	C
0.8612	0.043	61.29	38.47	1.311	38.75	2.04	59.21	"
0.9097	0.602	38.97	60.93	1.321	38.52	1.98	59.50	"
0.9524	2.170	23.84	73.99	1.307	38.21	1.58	60.21	"
				1.304	37.21	----	62.79	"

[a] The solid phases are: A = Na_2HPO_4; B = $Na_2HPO_4 \cdot 2H_2O$; C are supersaturated solutions which solidified when seeded.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The samples were stirred in a thermostat for 48 hours. The equilibration was done in the dark. The HPO_4^{2-} ion content was determined by a pH titration after evaporating the sample to dryness and dissolving the residue in bidistilled water. The 2-propanone content was determined iodometrically.	Merck reagent grade Na_2HPO_4 was dehydrated at 100°C and stored in a vacuum over NaOH. BLB reagent grade 2-propanone was used. The water was distilled twice and deaerated.
	ESTIMATED ERROR: The temperature was held within ± 0.1 K. The analyses had a precision of 0.5%.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Sodium perchlorate; $NaClO_4$; [7601-89-0] (3) 2-Propanone (acetone); C_3H_6O; [67-64-1] (4) Water; H_2O; [7732-18-5]	Ferroni, G.; Galea, J.; Antonetti, G. *Bull. Soc. Chim. Fr.* 1974, *12*, Pt. 1, 273-81.
VARIABLES:	**PREPARED BY:**
Two concentrations of $NaClO_4$ at 25°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of Na_2HPO_4 in aqueous $NaClO_4$ at 25°C.

C_{NaClO_4}/mol dm^{-3}	concn H_2O[b]	$C_{Na_2HPO_4}$/mol dm^{-3}	solid phase[a]
1	100	0.805	A
"	90.9	0.050	binodal curve
"	83.3	0.023	" "
"	66.7	0.0011	" "
"	50.0	0.33×10^{-3}	A
"	33.3	$\sim 6.9 \times 10^{-5}$	B
"	9.1	$\sim 1.5 \times 10^{-6}$	"
"	0.0	$<10^{-7}$	C
3	100	0.201	A
"	90.9	0.013	"
"	83.3	0.0048	"
"	66.7	1.17×10^{-3}	"
"	50.0	0.84×10^{-3}	"
"	33.3	$\sim 1.9 \times 10^{-4}$	B
"	9.1	$\sim 3.3 \times 10^{-6}$	"
"	0.0	$<10^{-7}$	C

[a] The solid phases are A = $Na_2HPO_4 \cdot 12H_2O$; B is probably $Na_2HPO_4 \cdot 2H_2O$; C = Na_2HPO_4.

[b] The concentration unit is: mol/100 mol of solvent.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The samples were stirred in a thermostat for 48 hours. Equilibration was done in the dark. The HPO_4^{2-} ion concentration was determined by an automatic potentiometric titration after evaporating the sample to dryness and dissolving the residue in bidistilled water. The 2-propanone content was determined iodometrically.

SOURCE AND PURITY OF MATERIALS:

Merck reagent grade Na_2HPO_4 was dehydrated at 100°C and stored over NaOH in a vacuum. The $NaClO_4$ was reagent grade. The water was bidistilled and deaerated. BLB reagent grade 2-propanone was used.

ESTIMATED ERROR:

The temperature was controlled to within ± 0.1 K. The analyses had a precision of ± 0.5%.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Disodium hydrogenphosphate; Na_2HPO_4; [7558-79-4] (2) Methanol; CH_4O; [67-56-1] (3) Water; H_2O; [7732-18-5]	Bruder, K.; Vohland, P.; Schuberth, H. *Z. Phys. Chem. (Leipzig)* 1977, *4*, 721-9.
VARIABLES: Composition at 60°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Part 1. Solubility in the CH_4O-H_2O-Na_2HPO_4 system at 60°C.

CH_3OH conc[a]	Na_2HPO_4 mol%	Na_2HPO_4 mass%[b]	CH_3OH conc[a]	Na_2HPO_4 mol%	Na_2HPO_4 mass%[b]
0.000	0.0918	44.39	0.313[c]	0.0045	2.79
0.040	0.0710	36.92	0.400	0.00204	1.22
0.050	0.0672	35.38	0.500	0.00080	0.453
0.100	0.0488	27.32	0.600	0.00021	0.113
0.150	0.0295	17.69	0.700	0.00011	0.0562
0.191	0.0130	8.30	0.800	0.000076	0.0369
0.200	0.0114	7.30	0.900	0.000060	0.0278
0.300	0.0047	2.93	0.950	0.000055	0.0249
			1.000	0.000054	0.0240

Part 2. The miscibility gap (conjugated solutions) in the CH_4O-H_2O-Na_2HPO_4 system.

CH_3OH conc[a]	Na_2HPO_4 mol%	Na_2HPO_4 mass%[b]	CH_3OH conc[a]	Na_2HPO_4 mol%	Na_2HPO_4 mass%[b]
0.040	0.071	36.92	0.191	0.013	8.30
0.073[d]	0.051	28.65	0.124	0.032	19.23
0.097	0.041	23.89			

[a] The concentration unit is: mol/100 mol of solvent.

[b] These values were calculated by the compiler.

[c] The point of transition of crystalline dihydrate into unsolvated salt.

[d] Critical solution.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Some mixtures were prepared by allowing the solid salt to equilibrate in the complex solvent. Other mixtures were prepared by adding methanol to aqueous solutions of Na_2HPO_4 until precipitation occurred. In all cases the liquid phase was evaporated to dryness and the residue was weighed. All data are designated as smoothed. No details are given about the computational procedure.

SOURCE AND PURITY OF MATERIALS:

The water was distilled twice. The methanol was obtained by rectification (n_D^{20} = 1.3286, d^{20} = 0.7913, b.p. = 64.6°C). The $Na_2HPO_4 \cdot 10H_2O$, a product of VEB Laborchemie Apolda, was dried by the method suggested by Menzies (1). The analysis by a Karl Fischer titration gave the water content as 0.04%.

ESTIMATED ERROR:

No details are given.

REFERENCES:

1. Menzies, A.W.; Humphrey, E.C. *C. R. Congr. Int. Appl. Electrocat. Electrochim.* 1912, *2*, 175.

COMPONENTS:	EVALUATOR:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May 1985

CRITICAL EVALUATION:

THE BINARY SYSTEM

There is a good deal of uncertainty about this system. There is disagreement about the solubility and about the composition of the solid phase. The data published by Apfel (1) for the solubility of trisodium phosphate over the temperature range of 273-356 K disagree with the data of Mulder (2) as quoted by others (3). Kobe and Leipper (4) reported the solubility of a substance having the composition $Na_3PO_4 \cdot 1/7NaOH \cdot 12H_2O$ and their results agree to some extent with those of Apfel (1). Ravich and Shcherbakova (5) reported the existence of solid solutions $mNa_3PO_4 \cdot nNaH_2PO_4$ in equilibrium with saturated solutions having Na/P ratios = 1/3 above 523 K.

The matter of the hydrates of Na_3PO_4 has also been the subject of disagreement. Most authors consider $Na_3PO_4 \cdot 12H_2O$ to be the solid phase at temperatures below 323 K, but Wendrow and Kobe (3) suggest that it is $Na_3PO_4 \cdot 1/4NaOH \cdot 12H_2O$. The solid phase in equilibrium with saturated solutions is reported to be $Na_3PO_4 \cdot 10H_2O$ over the temperature range 323-333 K and $Na_3PO_4 \cdot 8H_2O$ at temperatures from 343 to 348 K (1). But others (3), on the basis of extrapolated data, suggest that the equilibrium solid phases are $Na_3PO_4 \cdot 1/4NaOH \cdot 12H_2O$ at temperatures up to 328 K, $Na_3PO_4 \cdot 8H_2O$ from 328-338 K, and $Na_3PO_4 \cdot 6H_2O$ from 338-373 K. More work is needed to clarify the nature of the solid phases before the solubility data can be evaluated.

Schroeder, et al. (6) made solubility measurements over the temperature interval 348-523 K. They reported the equilibrium solid phase to be $Na_3PO_4 \cdot H_2O$ in the temperature interval 393-488 K and the anhydrous Na_3PO_4 to be the solid phase above 488 K. Attempts to fit these data to the general solubility equations described and discussed in the section on NaH_2PO_4 (chap. 3) were unsuccessful. The number of experimental points remaining after the iteration was too small to consider the results to be reasonable. Perhaps a different model is needed to treat these data.

MULTICOMPONENT SYSTEMS

The phase diagrams for systems in which Na_3PO_4 is a component differ substantially from those in which NaH_2PO_4 or Na_2HPO_4 are components. The latter usually form simple eutonic systems, while with systems containing Na_3PO_4 the formation of solid solutions or complex compounds has often been reported. Solubility values reported for these systems often disagree with each other. This is probably due to the chemical complexity of the systems and the fact that the analyses are complicated by the high pH values of these systems.

No solid solutions or complex compounds have been reported as equilibrium solid phases for the following systems:

Na_3PO_4-$NaNO_2$-H_2O at 298 K (7);

Na_3PO_4-NaCl-H_2O at 298 and 378 K (8);

Na_3PO_4-Na_2WO_4-H_2O at 503 K (9);

Na_3PO_4-Na_2CO_3-H_2O at 273 and 293 K (10), and 298 K (11).

The presence of a small amount of NaOH in one study of the last system above (4) resulted in only a small increase in the concentration of the other salt components.

Solid solutions have been reported as solid phases for the following systems:

Na_3PO_4-$Na_2B_4O_7$-H_2O at 293 K (12);

Na_3PO_4-$NaClO_4$-H_2O at 293 K (12);

Na_3PO_4-NaF-H_2O at 298 K (13).

Complex compounds that have been reported as solid phases are:
$Na_3PO_4 \cdot 4.5H_2O_2$ in the Na_3PO_4-H_2O_2-H_2O system at 253 K (14);
$Na_3PO_4 \cdot 4.5H_2O_2$ and $Na_3PO_4 \cdot H_2O_2$ in the above system at 273 K (14);
$Na_3PO_4 \cdot Cu_3(PO_4)_2$ in the Na_3PO_4-$Cu_3(PO_4)_2$-H_2O system at 298 and 323 K (15).

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May, 1985

CRITICAL EVALUATION:

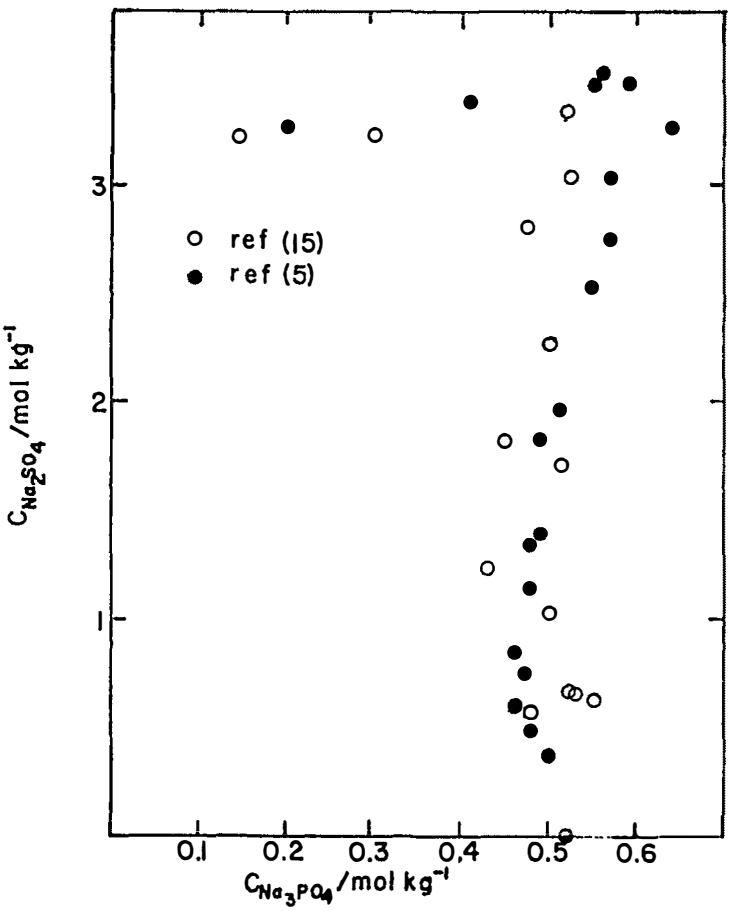

Figure 1. Solubility in the Na_3PO_4-Na_2SO_4-H_2O system at 523 K.

COMPONENTS:	EVALUATOR:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May 1985

CRITICAL EVALUATION: (cont'd)

Three groups of systems have been studied in more detail.

1. The Na_3PO_4-Na_2SO_4-H_2O system. This system has been studied at 523 K (16) and at 423, 473, 523 and 573 K (6). (In the latter paper some data were also reported for the Na_3PO_4-Na_2SO_4-NaOH-H_2O system.) The results obtained at 523 K, Figure 1, agree reasonably well with each other. However, one group reports a solid phase of $Na_2SO_4 \cdot 2Na_3PO_4$ (6) while the other group (16) reports instead two types of phases having varying compositions. Additional work is needed to settle this matter.

2. Abduragimova, et al. have studied the following systems at 298 K:

Na_3PO_4-$NaVO_3$-H_2O (17)

Na_3PO_4-Na_2SO_4-H_2O (17)

Na_3PO_4-$NaVO_3$-Na_2SO_4-H_2O (18)

($NaAlO_2$ + NaOH)-Na_3PO_4-$NaVO_3$-H_2O (19)

($NaAlO_2$ + NaOH)-Na_3PO_4-Na_2SO_4-H_2O (19).

The following solid phases were reported as being present:

$4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 30H_2O$; $4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 18H_2O$; and $3Al_2O_3 \cdot 4Na_2O \cdot P_2O_5 \cdot 15H_2O$.

However, these data are not considered to be reliable because of many obvious errors in the tabular data. The errors make it difficult to interpret the data.

3. A group of Armenian authors has studied the following systems:

Na_3PO_4-Na_2SiO_3-H_2O (20,21);

Na_3PO_4-K_3PO_4-H_2O (22);

Na_3PO_4-Na_2SiO_3-NaOH-H_2O (23);

Na_3PO_4-Na_2SiO_3-Na_2CO_3-H_2O (21);

$3K^+, 3Na^+ || PO_4^{3-}, 3/2SiO_3^{2-}$-$H_2O$ (24).

Ref. (23) contains only graphical data and in the other papers the data consist of limits within which the individual phases exist, rather than precise solubility data. The most recent report (21) maintains that no solid solutions of Na_2SiO_3 and Na_3PO_4 are formed, but does not substantiate this statement. Therefore, more work is needed before this set of papers can be evaluated.

The system Na_3PO_4-CH_3COCH_3-H_2O has also been studied (25). In contrast to the NaH_2PO_4-CH_3COCH_3-H_2O and Na_2HPO_4-CH_3COCH_3-H_2O systems (26), no limited miscibility has been observed.

(continued next page)

COMPONENTS:	EVALUATOR:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Water; H_2O; [7732-18-5]	J. Eysseltová Charles University Prague, Czechoslovakia May 1985

CRITICAL EVALUATION: (cont'd)

References

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3. Wendrow, B.; Kobe, K.A. *Ind. Eng. Chem.* 1952, *44*, 1439.
4. Kobe, K.A.; Leipper, A. *Ind. Eng. Chem.* 1940, *32*, 198.
5. Ravich, M.I.; Shcherbakova, L.G. *Izv. Sektora Fiz.-Khim. Analiza, Inst. Obshch. Neorgan., Khim. Akad. Nauk SSSR* 1955, *26*, 248.
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COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Apfel, O.
(2) Water; H_2O; [7732-18-5]	Dissertation, Technical University, Darmstadt, 1911.
VARIABLES:	**PREPARED BY:**
Temperature and Composition	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of Na_3PO_4 in water.

	PO_4^{3-}	Na_3PO_4 [a]		
t/°C	mol/kg sln	mass%	mol/kg	solid phase [b]
0	0.26	4.27	0.27	A
25	0.75	12.31	0.86	"
37	0.98	16.08	1.17	B
40	1.02	16.74	1.23	"
44	1.09	17.89	1.33	"
50	1.38	22.65	1.78	B + C [c]
55	1.595	26.18	2.16	C
65	1.84	30.20	2.64	"
70	1.99	32.66	2.96	"
75	2.14	35.12	3.30	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_3PO_4 \cdot 12H_2O$; B = $Na_3PO_4 \cdot 10H_2O$; C = $Na_3PO_4 \cdot 8H_2O$.

[c] The octahydrate is said to exist in the region 50 to 75°C "with great probability".

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

All the experiments were performed in a water thermostat. The attainment of equilibrium was checked by repeated analysis of the liquid phase. The liquid phase was separated from the solid phase by filtration through a mat of platinum wires. Phosphate was precipitated as $NH_4MgPO_4 \cdot 6H_2O$ and weighed as $Mg_2P_2O_7$. Sodium was determined as Na_2SO_4 after phosphoric acid had been removed as lead phosphate.

SOURCE AND PURITY OF MATERIALS:

Nothing given.

ESTIMATED ERROR:

Nothing given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Schroeder, W.C.; Berk, A.A.; Gabriel, A.
(2) Water; H_2O; [7732-18-5]	*J. Am. Chem. Soc.* 1937, 59, 1783-90.
VARIABLES:	**PREPARED BY:**
Temperature and Composition	J. Eysseltová

EXPERIMENTAL VALUES:

Solubility of Na_3PO_4 in water at 83 to 350°C.

		concn of Na_3PO_4		
t/°C	g(1)/100 g(2)	mass% [a]	mol/kg [a]	time/h [b]
83	61.1	37.93	3.72	39
83	62.2	38.35	3.79	39
101	78.4	43.95	4.78	43
101	76.8	43.44	4.68	43
115	88.6	46.98	5.40	48
115	90.3	47.45	5.50	48
115	89.8	47.31	5.47	48
121	93.2	48.24	5.68	86
129	91.1	47.67	5.55	45
129	89.3	47.17	5.44	45
139	88.2	46.85	5.37	39
139	88.7	47.00	5.40	39
139	88.8	47.03	5.41	39
150	83.9	45.62	5.11	16
150	79.8	44.38	4.86	16
150	83.1	45.38	5.06	44
150	78.9	44.10	4.81	44
150	82.2	45.12	5.01	44
150	84.1	45.68	5.12	18
150	78.6	44.01	4.79	18
159	76.0	43.18	4.63	66

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Self-constructed high temperature solubility bomb with sampler ensuring the sampling at the operating temperature. The time of equilibration varied from case to case, because of the difficulty in attaining true equilibrium. Phosphate determinations were made by a colorimetric method using aminonaphtholsulfonic acid (1).

SOURCE AND PURITY OF MATERIALS:

Merck CP $Na_3PO_4 \cdot 12H_2O$ was used. The actual phosphate content of this material was determined by analysis but the results are not given. In some cases the dodecahydrate was dried at 120°C to give approximately the monohydrate or it was recrystallized at 250°C to give the anhydrous salt.

ESTIMATED ERROR:

Phosphate determination: the error not greater than 1%.

REFERENCES:

1. Fiske, C.H.; Subbarow, J.T.
J. Biol. Chem. 1925, *66*, 375.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate, Na_3PO_4; [7601-54-9]	Schroeder, W.C.; Berk, A.A.; Gabriel, A.
(2) Water; H_2O; [7732-18-5]	*J. Am. Chem. Soc.* 1937, 59, 1783-90.

EXPERIMENTAL VALUES cont'd:

Solubility of Na_3PO_4 in water at 83 to 350°C.

			concn of Na_3PO_4		
t/°C	g(1)/100 g(2)		mass% [a]	mol/kg [a]	time/h [b]
169	71.9		41.83	4.38	47
169	70.2		41.24	4.28	47
185	66.2		39.83	4.03	48
185	65.0		39.39	3.96	48
187	63.1		38.69	3.84	67
187	62.0		38.27	3.78	67
204	62.0		38.27	3.78	71
204	60.8		37.81	3.70	71
214	50.0		33.33	3.05	90
214	50.8		33.69	3.09	90
216	48.8		32.80	2.97	65
216	47.6		32.25	2.90	65
225	25.2		20.13	1.54	15
225	33.7		25.20	2.05	15
225	27.3		21.44	1.66	18
225	27.8		21.75	1.69	18
235	17.9		15.18	1.09	17
250	8.6		7.92	0.52	17
250	8.6		7.92	0.52	17
250	8.5		7.83	0.52	17
300	2.4		2.34	0.15	18
350	0.15		0.15	0.01	19

[a] These values were calculated by the compiler.

[b] This is the time allowed for equilibration.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Obukhov, A.P; Mikhailova, M.N.
(2) Sodium chloride; NaCl; [7647-14-5]	*Zh. Prikl. Khim.* 1935, *8*, 1148-51.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Two temperatures: 25 and 105°C	J. Eysseltová
Composition	

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-NaCl-H_2O system.

Na_3PO_4			NaCl			
mass %	mol %	mol/kg[a]	mass %	mol %	mol/kg[a]	solid phase[b]
			temp. = 25°C.			
13.40	1.67	0.94	----	----	----	A
9.51	1.15	0.65	2.00	0.68	0.39	"
7.24	0.87	0.49	3.48	1.17	0.67	"
5.14	0.61	0.35	6.12	2.06	1.18	"
4.70	0.57	0.32	7.45	2.53	1.45	"
4.28	0.53	0.30	10.44	3.61	2.09	"
3.07	0.38	0.22	12.50	4.34	2.53	"
2.32	0.29	0.18	17.05	6.09	3.62	"
1.96	0.26	0.16	21.92	8.12	4.93	"
1.90	0.25	0.16	25.26	9.62	5.93	A + C
0.95	0.12	0.08	25.76	9.75	6.01	C
----	----	----	26.40	9.94	6.14	"

(continued on next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Isothermal method using an oil thermostat. The mixtures were equilibrated for 2-3 hours at 25° and for 30 min at 105°C. At 105°C the samples of saturated solution were drawn into glass tubes and allowed to solidify. The tubes were then weighed and the samples were washed out and analyzed. P_2O_5 was determined gravimetrically using the method of Schmitz (no reference is given). Chloride was determined by the Volhard method. The composition of the solid phases was determined by Schreinemakers' method.

SOURCE AND PURITY OF MATERIALS:

Nothing given.

ESTIMATED ERROR:

Nothing given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4, [76-54-9]	Obukhov, A.P., Mikhailova M.N.
(2) Sodium chloride; NaCl, [7647-14-5]	*Zh. Prikl. Khim.* 1935, *8*, 1148-51.
(3) Water, H_2O, [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the Na_3PO_4-NaCl-H_2O system.

Na_3PO_4			NaCl			
mass %	mol %	mol/kg[a]	mass %	mol %	mol/kg[a]	solid phase[b]
			temp. = 105°C.			
49.7.	9.78	6.01	----	----	----	B
44.50	8.33	5.11	2.56	1.34	0.83	"
43.35	8.03	4.93	3.15	1.63	1.01	"
39.70	7.26	4.50	6.67	3.42	2.13	"
37.33	6.67	4.13	7.75	3.89	2.41	"
35.75	6.29	3.89	8.40	4.15	2.57	"
34.62	6.09	3.80	9.95	4.91	3.07	B + C
33.89	5.93	3.69	10.30	5.06	3.16	C
21.72	3.43	2.13	16.27	7.21	4.49	"
14.60	2.19	1.36	20.08	8.46	5.26	"
10.78	1.57	0.98	22.23	9.12	5.68	"
3.30	0.46	0.28	26.51	10.37	6.46	"
1.31	0.18	0.11	27.65	10.68	6.66	"
-----	----	----	28.25	10.81	6.74	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_3PO_4 \cdot 12H_2O$; B = Na_3PO_4; C = NaCl.

COMMENT: According to the authors, the most concentrated solutions of Na_3PO_4 did attack the glass of the vessels containing the mixtures.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium sulfate; Na_2SO_4; [7757-82-6] (3) Water; H_2O; [7732-18-5]	Schroeder, W.C.; Berk, A.A.; Gabriel, A. *J. Am. Chem. Soc.* 1937, 59, 1783-90.
VARIABLES: Composition at temperatures of 150° to 350°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-Na_2SO_4-H_2O system.

Na_3PO_4			Na_2SO_4			H_2O
g/100g H_2O	mass%[a]	mol/kg[a]	g/100g H_2O	mass%[a]	mol/kg[a]	mass%[a]
			temp. = 150°C.			
3.1	2.35	0.21	41.5	28.70	2.93	68.95
6.1	4.56	0.41	40.6	27.67	2.88	67.76
9.0	6.63	0.61	39.8	26.75	2.83	66.62
11.9	8.64	0.80	39.1	25.89	2.78	65.47
15.4	10.97	1.04	38.4	24.97	2.74	64.06
21.4	14.77	1.46	37.2	23.46	2.67	61.77
30.5	20.14	2.08	34.6	20.96	2.50	58.90
40.6	25.57	2.77	31.2	18.16	2.27	56.27
51.7	30.97	3.51	27.3	15.25	2.00	53.78
57.4	33.56	3.87	24.9	13.66	1.82	52.78
60.8	35.20	4.06	21.8	11.94	1.59	52.86
65.9	37.28	4.38	20.2	10.85	1.47	51.86
70.9	39.33	4.67	17.7	9.38	1.29	51.29
69.7	39.36	4.50	13.5	7.37	0.97	53.27
67.4	38.65	4.33	12.6	7.00	0.90	54.35
69.4	40.08	4.35	6.6	3.75	0.47	56.17
70.7	41.02	4.36	2.9	1.67	0.20	57.31
74.9	42.58	4.60	1.8	1.02	0.13	56.40
76.5	42.90	4.73	3.3	1.84	0.23	55.27
80.0	44.04	4.94	3.0	1.64	0.21	54.32
79.8	44.26	4.88	0.9	0.50	0.06	55.24

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A self constructed high temperature solubility bomb was used. Samples were taken at the operating temperature. The time allowed for equilibration is not specified. Phosphate determinations were made by a colorimetric method using aminonaphtholsulfonic acid (1). Sulfate was determined gravimetrically as $BaSO_4$. Care was taken to avoid adsorption of phosphate.

SOURCE AND PURITY OF MATERIALS:

Merck chemically pure $Na_3PO_4 \cdot 12H_2O$ was used. If necessary, the dodecahydrate was dried at 120°C to give approximately the monohydrate or it was recrystallized at 250°C to give the anhydrous salt. No other details are given.

ESTIMATED ERROR:

The error in the phosphate determination is less than 1%. No other details are given.

REFERENCES:

1. Fiske, C.H.; Subbarow, J.T. *J. Biol. Chem.* 1925, 66, 375.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Schroeder, W.C.; Berk, A.A.; Gabriel, A.
(2) Disodium sulfate, Na_2SO_4; [7757-82-6]	*J. Am. Chem. Soc.* 1937, 59, 1783-90.
(3) Water, H_2O, [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the Na_3PO_4-Na_2SO_4-H_2O system.

Na_3PO_4			Na_2SO_4			H_2O
g/100g H_2O	mass%[a]	mol/kg[a]	g/100g H_2O	mass%[a]	mol/kg[a]	mass%[a]
			temp. = 200°C.			
2.9	2.18	0.20	44.6	30.24	3.15	67.58
5.8	4.28	0.40	44.9	29.79	3.18	65.93
10.0	7.18	0.69	45.6	29.30	3.25	63.52
15.1	10.50	1.05	46.2	28.64	3.31	60.85
22.2	14.79	1.57	47.2	27.86	3.42	57.34
17.9	12.27	1.25	45.8	27.98	3.30	59.75
17.8	12.24	1.24	44.9	27.60	3.23	60.16
20.1	13.70	1.40	43.6	26.63	3.14	59.67
20.5	13.93	1.43	43.8	26.66	3.16	59.41
19.3	13.46	1.31	37.8	24.06	2.71	62.48
20.3	14.10	1.38	37.3	23.67	2.68	62.23
22.5	15.87	1.49	29.2	19.25	2.09	64.88
23.7	16.74	1.56	27.0	17.92	1.93	65.35
23.9	16.96	1.56	25.4	17.01	1.81	66.03
26.4	18.75	1.71	21.2	14.36	1.51	66.88
28.4	20.06	1.83	19.5	13.18	1.39	66.76
29.3	20.88	1.87	16.0	11.01	1.14	68.11
29.5	20.99	1.88	16.1	11.06	1.14	67.95
30.9	21.96	1.96	14.2	9.79	1.01	68.25
35.4	25.16	2.20	7.6	5.31	0.54	69.53
34.6	24.72	2.15	7.6	5.34	0.54	69.93
48.9	32.41	3.01	3.0	1.97	0.21	65.61
56.0	35.82	3.42	0.5	0.32	0.04	63.86
			temp. = 250°C.			
2.9	2.16	0.20	46.6	31.17	3.29	66.67
6.0	4.38	0.41	47.4	30.90	3.36	64.72
8.1	5.82	0.56	48.9	31.15	3.48	63.04
8.0	5.76	0.55	48.5	30.99	3.45	63.25
8.5	6.10	0.59	48.5	30.89	3.45	63.01
9.3	6.70	0.64	45.9	29.57	3.27	63.73
8.4	6.15	0.57	42.7	28.26	3.03	65.59
8.5	6.30	0.57	38.8	26.34	2.75	67.36
8.3	6.24	0.55	35.6	24.74	2.52	69.02
8.0	6.24	0.52	27.3	20.18	1.93	73.58
7.6	5.99	0.49	25.6	19.22	1.81	74.79
7.8	6.32	0.49	19.9	15.58	1.40	78.09
7.6	6.29	0.48	16.3	13.16	1.15	80.55
7.4	6.30	0.46	11.9	9.97	0.84	83.72
7.6	6.52	0.47	10.7	9.04	0.75	84.44
7.4	6.45	0.46	8.5	7.33	0.60	86.22
7.8	6.86	0.48	6.7	5.85	0.47	87.28
8.8	7.83	0.54	4.1	3.63	0.29	88.54
8.1	7.33	0.49	2.7	2.44	0.19	90.24
8.5	7.69	0.52	2.2	1.99	0.15	90.32
9.5	8.60	0.58	1.1	0.99	0.08	90.41
8.3	7.63	0.50	0.5	0.46	0.04	91.91
8.6	7.92	0.52	trace	----	----	92.08

(continued next page)

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Schroeder, W.C.; Berk, A.A.; Gabriel, A.
(2) Disodium sulfate; Na_2SO_4; [7757-82-6]	*J. Am. Chem. Soc.* 1937, 59, 1783-90.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the Na_3PO_4-Na_2SO_4-H_2O system.

Na_3PO_4			Na_2SO_4			H_2O
g/100g H_2O	mass%[a]	mol/kg[a]	g/100g H_2O	mass%[a]	mol/kg[a]	mass%[a]
			temp. = 300°C.			
2.0	1.60	0.13	30.7	23.13	2.16	75.27
4.9	3.74	0.32	36.8	25.97	2.60	70.28
3.5	2.84	0.22	25.2	19.58	1.78	77.58
2.7	2.30	0.17	17.8	14.77	1.25	82.93
1.8	1.66	0.11	6.9	6.34	0.48	91.99
1.7	1.63	0.10	2.8	2.68	0.20	95.96
3.7	3.49	0.22	2.4	2.26	0.17	94.25
1.9	1.84	0.12	1.4	1.36	0.10	96.80
			temp. = 350°C.			
0.14	0.14	0.01	2.02	1.98	0.01	97.88
0.11	0.11	0.01	1.01	1.00	0.01	98.89
0.21	0.21	0.01	0.10	0.10	0.01	99.69

[a] These values were calculated by the compiler.

COMMENTS: At 150°C the analyses of the solutions containing 51.7 g Na_3PO_4 per 100 g H_2O and greater are said to be not consistent enough to be plotted with the other data. At 200°C $Na_2SO_4 \cdot 2Na_3PO_4$ and $Na_2SO_4 \cdot 5Na_3PO_4$ are supposed to exist as the equilibrium solid phases. At 250°C only the first compound is mentioned.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium carbonate; Na_2CO_3; [497-19-8] (3) Water; H_2O; [7732-18-5]	Korf, D.M.; Balyasnaya, A.M. *Zh. Prikl. Khim.* 1941, *14*, 475-7.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-Na_2CO_3-H_2O system at 25°C.

concn of Na_3PO_4			concn of Na_2CO_3			
mass %	mol %	mol/kg [a]	mass %	mol %	mol/kg [a]	solid phase [b]
13.4	16.71	0.94	----	----	----	A
8.95	11.20	0.63	4.91	9.52	0.54	"
7.48	9.55	0.54	8.65	17.10	0.97	"
7.12	9.25	0.53	11.25	22.68	1.30	"
6.78	9.14	0.53	14.91	31.00	1.80	"
6.40	9.05	0.52	19.30	42.10	2.45	A + B
6.34	8.93	0.52	19.32	42.00	2.45	A + B
5.82	8.10	0.47	19.00	40.90	2.38	B
4.73	5.90	0.38	20.03	42.80	2.51	"
3.93	5.41	0.32	20.50	44.60	2.56	"
1.87	2.55	0.15	21.00	44.3	2.57	"
----	----	----	22.75	47.5	2.78	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Na_3PO_4 \cdot 12H_2O$; B = $Na_2CO_3 \cdot 10H_2O$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method with the use of a thermostat. Na_3PO_4, Na_2CO_3 and NaOH were determined simultaneously by an acido-basic titration (1). The P_2O_5 content was also checked gravimetrically. The composition of the solid phases was determined microscopically and also by Schreinemakers' method.	The $Na_3PO_4 \cdot 12H_2O$ containing 1.80 % NaOH was crystallized three times before use. No details are given about the Na_2CO_3.
	ESTIMATED ERROR: The temperature deviation was less than ± 0.2 K.
	REFERENCES: 1. Smith, J.H. *J. Soc. Chem. Ind.* 1917, *36*, 415.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Ravich, M.I.; Yastrebova, L.F.
(2) Disodium sulfate; Na_2SO_4; [7757-82-6]	*Zh. Neorg. Khim.* 1958, 3, 2771-80
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition at 250°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-Na_2SO_4-H_2O system at 250°C.

Na_3PO_4		Na_2SO_4		NaOH[b]	solid phase Na_3PO_4	solid phase Na_2SO_4	solid phase Na_2HPO_4[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	mass%	mass%	mass%
7.8	0.52	----	----	1.1	89.7	----	10.3
7.6	0.52	3.0	0.24	0.06	86.9	12.1	1.0
7.5	0.52	5.3	0.43	----	85.0	15.0	----
7.3	0.52	8.0	0.66	----	82.8	17.2	----
7.6	0.55	7.8	0.65	----	82.7	17.3	----
6.8	0.48	7.0	0.57	----	79.2	20.8	----
6.8	0.48	6.9	0.56	----	77.6	22.4	----
7.3	0.52	7.9	0.66	----	76.2	23.8	----
6.7	0.50	12.1	1.05	----	75.2	24.8	----
5.7	0.43	14.1	1.24	----	74.9	25.1	----
6.3	0.51	18.2	1.70	----	73.1	26.9	----
5.6	0.45	19.4	1.82	----	71.3	28.7	----
5.9	0.51	23.6	2.36	----	68.9	31.1	----
5.2	0.47	26.9	2.79	----	58.8	41.2	----
5.6	0.52	28.4	3.03	----	55.4	44.6	----
5.5	0.52	30.4	3.34	----	51.6	48.4	----
5.4	0.51	30.4	3.33	----	20.1	79.9	----
3.3	0.30	30.5	3.24	----	1.0	99.0	----
1.6	0.14	30.9	3.22	----	0	100	----

[a] The mol/kg H_2O values were calculated by the compiler.

[b] These products were produced by hydrolysis.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The phosphates and the NaOH produced by hydrolysis reactions were determined by titration with acid. The determination of phosphates was done gravimetrically as $Mg_2P_2O_7$. Sulfates were determined gravimetrically as $BaSO_4$ after removing the phosphates as iron phosphate. The composition of the solid phases was determined from the composition of the phase complex and that of the corresponding saturated solution. Corrections were made for water of evaporation.

SOURCE AND PURITY OF MATERIALS:

The Na_2SO_4 was chemically pure. Solutions of Na_3PO_4 were prepared from twice recrystallized Na_2HPO_4 and approximately 50% solution of chemically pure NaOH.

ESTIMATED ERROR:

Temperature was constant to within ± 0.5 K. The error in the solid phase composition was less than ± 0.6%. No other details are given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Hydrogen peroxide; H_2O_2; [7722-84-1] (3) Water; H_2O; [7732-18-5]	Ukraintseva, E.A. *Izv. Sib. Otd. Akad. Nauk SSSR, Ser. Khim.* 1961, 3, 14-24.
VARIABLES: Composition at -20° and 0°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-H_2O_2-H_2O system.

Na_3PO_4		H_2O_2		H_2O	
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	solid phase[b]
		temp. = -20°C.			
13.1	1.32	26.6	12.97	60.3	A
13.1	1.34	27.5	13.61	59.4	"
10.8	1.10	29.7	14.67	59.5	"
10.4	1.07	30.4	15.09	59.2	"
7.5	0.86	39.3	21.71	53.2	"
8.1	0.85	34.0	17.26	57.9	"
6.7	0.83	44.0	26.23	49.3	"
9.3	1.33	48.2	33.34	42.5	"
9.3	1.67	56.9	49.48	33.8	B
9.3	1.93	60.1	58.30	30.3	"
12.3	3.45	66.0	89.40	21.7	"
		temp. = 0°C.			
5.1	0.33	0	0	94.9	C
3.7	0.24	1.5	0.46	94.8	"
4.3	0.28	3.6	1.15	92.1	"
5.3	0.36	5.3	1.74	89.4	"
4.9	0.33	5.4	1.77	89.7	C + D
3.6	0.24	6.9	2.27	89.5	D

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The duration of the experiments is given as 3 to 14 hours and more. The compiler supposes that this is the time of equilibration under isothermal conditions. The hydrogen peroxide content was determined by titration with permanganate. The phosphate content was determined gravimetrically as $Mg_2P_2O_7$. The composition of the solid phases was determined by the Schreinemakers' method.	The hydrogen peroxide was chemically pure and free of stabilizers. No other information is given.
	ESTIMATED ERROR: No details are given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Ukraintseva, E.A.
(2) Hydrogen peroxide; H_2O_2, [7722-84-1]	*Izv. Sib. Otd. Akad. Nauk SSSR, Ser. Khim.* 1961, 3, 14-24.
(3) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the Na_3PO_4-H_2O_2-H_2O system.

Na_3PO_4		H_2O_2		H_2O	solid[b]
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%[a]	phase
		temp = 0°C.			
4.9	0.35	10.7	3.73	84.4	D
7.3	0.58	15.4	5.86	77.3	"
10.9	0.91	16.5	6.68	72.6	"
11.5	0.99	17.9	7.45	70.6	"
9.4	0.80	19.2	7.90	71.4	"
15.4	1.66	28.0	14.54	56.6	A + D
17.6	1.92	26.7	14.09	55.7	A + D
16.7	1.80	26.7	13.87	56.6	A + D
15.5	1.66	27.5	14.18	57.0	A
16.0	1.72	27.3	14.15	56.7	"
16.1	1.73	27.3	14.18	56.6	"
16.8	1.85	27.8	14.75	55.4	"
16.4	1.80	28.1	14.88	55.5	"
14.9	1.63	29.4	15.52	55.7	"
11.6	1.22	30.6	15.56	57.8	"
11.7	1.26	31.6	16.38	56.7	"
11.8	1.29	32.4	17.07	55.8	"
10.2	1.16	36.3	19.94	53.5	"
10.2	1.17	36.7	20.32	53.1	"
10.3	1.26	39.9	23.55	49.8	"
9.7	1.16	39.2	22.55	51.1	"
11.9	1.51	40.2	24.67	47.9	"
11.1	1.55	45.2	30.40	43.7	B
9.7	1.32	45.7	30.12	44.6	"
9.7	1.48	50.5	37.30	39.8	"
9.6	1.50	51.4	38.74	39.0	"
9.6	1.50	51.5	38.92	38.9	"
12.1	3.15	64.5	81.02	23.4	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_3PO_4 \cdot 4.5H_2O_2$; B = the solid decomposes; C = $Na_3PO_4 \cdot 12H_2O$; D = $Na_3PO_4 \cdot H_2O_2$.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium silicate; Na_2SiO_3; [6834-92-0] (3) Water; H_2O; [7732-18-5]	Babayan, G.G.; Sayamyan, E.A.; Darbinyan, G.M. *Arm. Khim. Zh.* 1970, *23*, 986-9.
VARIABLES: Composition at 0 and 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility isotherms at 0 and 25°C are presented only in graphical form.

The following data are reported in the text:

t/°C	Na_3PO_4 mass%	Na_2SiO_3 mass%	
0	0-0.78	9.83-10.6	$Na_2SiO_3 \cdot 9H_2O$
0	"from 1.04"	10.7-11.13	solid solutions
0	2.39-9.2	8.75-1.04	$Na_3PO_4 \cdot 12H_2O$
25	0-1.02	22.2-22.3	$Na_2SiO_3 \cdot 9H_2O$
25	1.1-3.68	23.1-13.45	solid solutions
25	4.67-11.8	1.44-10.02	$Na_3PO_4 \cdot 12H_2O$

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used with equilibrium being attained in 3 days. SiO_2 was determined gravimetrically by precipitation as H_2SiO_3 and decomposition at 1000°C. Phosphate was precipitated with ammonium molybdate. The phosphomolybdate was dissolved in alkali hydroxide and the excess hydroxide was titrated acidimetrically. The composition of the solid phases was determined by Schreinemakers' method but no data are reported.

SOURCE AND PURITY OF MATERIALS:

The sodium phosphate was chemically pure and the sodium metasilicate was reagent grade. The extent of hydration is not specified.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Sodium vanadate; $NaVO_3$; [13718-23-8] (3) Water; H_2O; [7732-18-5]	Abduragimova, R.A.; Rza-Zade, P.F. *Issled. Obl. Neorg. Fiz. Khim.* 1971, 179-85.
VARIABLES:	**PREPARED BY:**
Composition at 25°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-$NaVO_3$-H_2O system at 25°C.

Na_3PO_4		$NaVO_3$		
mass%	mol/kg[a]	mass%	mol/kg[a]	solid phase
12.30	0.85	----	----	Na_3PO_4[b]
----	----	17.40	1.73	$NaVO_3$[b]
11.0	0.76	0.40	0.04	$Na_3PO_4 \cdot 12H_2O$
8.15	0.55	1.98	0.18	"
7.38	0.50	2.81	0.26	"
5.41	0.36	4.43	0.40	"
4.39	0.30	5.93	0.54	"
3.85	0.26	7.60	0.70	"
3.80	0.26	9.12	0.86	"
4.18	0.30	10.45	1.00	"
5.21	0.38	12.05	1.19	$Na_3PO_4 \cdot 12H_2O + 4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 30H_2O$
4.48	0.33	12.26	1.21	$4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 30H_2O$
3.23	0.24	13.68	1.35	"
2.40	0.17	13.81	1.35	"
1.26	0.09	15.40	1.52	"
1.25	0.09	16.82	1.68	"
1.03	0.08	17.01	1.70	$4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 30H_2O + NaVO_3 \cdot 2H_2O$

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The extent of hydration is ignored.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used but no experimental details are given. The vessels were molybdenum vessels, probably made from molybdenum glass. The determination of alkali metals was made by using 0.5 mol dm^{-3} HCl. The V and P content were determined photocolorimetrically. No details are given.	Chemically pure $Na_3PO_4 \cdot 12H_2O$ and $NaVO_3 \cdot 2H_2O$ were recrystallized before use.
	ESTIMATED ERROR: No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium sulfate; Na_2SO_4; [7757-82-6] (3) Water; H_2O; [7732-18-5]	Abduragimova, R.A.; Rza-Zade, P.F. *Issled. Obl. Neorg. Fiz. Khim.* 1971, 179-85.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_2SO_4-Na_3PO_4-H_2O system at 25°C.

Na_2SO_4		Na_3PO_4		
mass%	mol/kg[a]	mass%	mol/kg[a]	solid phase
21.88	1.97	----	----	Na_2SO_4[b]
----	----	12.2780	0.85	Na_3PO_4[b]
20.7500	1.89	2.1023	0.17	$Na_2SO_4 \cdot 10H_2O$ + $Na_3PO_4 \cdot 12H_2O$
19.4120	1.73	1.7860	0.14	$Na_3PO_4 \cdot 12H_2O$
19.3920	1.73	1.7970	0.14	"
15.6640	1.34	2.1920	0.16	"
15.6600	1.34	2.2730	0.17	"
13.5800	1.14	2.6500	0.19	"
13.5679	1.14	2.6190	0.19	"
10.2530	0.84	3.8140	0.27	"
10.2960	0.84	3.7990	0.27	"
7.4310	0.60	5.1920	0.36	"
7.3830	0.60	5.2710	0.37	"
4.4920	0.36	6.9630	0.48	"
4.4318	0.35	7.0250	0.48	"
1.5130	0.12	11.2200	0.78	"
1.4570	0.12	10.672	0.74	"
----	----	10.613	0.72	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The extent of hydration was apparently ignored (compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used but no details are given. Molybdenum vessels were used. The alkali metal content was determined using 0.5 mol dm^{-3} HCl. Sulfate was determined gravimetrically as $BaSO_4$. Phosphate was determined colorimetrically.

SOURCE AND PURITY OF MATERIALS:

Both salts were of chemically pure grade and were recrystallized before being used.

ESTIMATED ERROR:

No details are given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Babayan, G.G.; Darbinyan, G.M.
(2) Sodium perchlorate; $NaClO_4$; [7601-89-0]	*Arm. Khim. Zh.* 1972, 25, 482-7.
(3) Water; H_2O, [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition at 20°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-$NaClO_4$-H_2O system at 20°C.

Na_3PO_4		$NaClO_4$		H_2O	
mass %	mol/kg [a]	mass %	mol/kg [a]	mass % [a]	solid phase
0.39	0.06	58.40	11.58	41.21	$NaClO_4 \cdot H_2O$
0.40	0.05	52.80	9.21	46.80	solid solution
0.47	0.06	47.70	7.52	51.83	" "
2.14	0.23	41.60	6.04	56.26	" "
1.80	0.19	41.35	5.94	56.85	" "
2.54	0.25	35.87	4.76	61.59	" "
2.90	0.28	34.70	4.54	62.40	" "
3.20	0.27	26.00	3.00	70.80	$Na_3PO_4 \cdot 12H_2O$
4.80	0.40	21.80	2.42	73.40	"
12.46	0.97	9.80	1.03	77.74	"
18.42	1.45	4.48	0.47	77.10	"
14.46	1.14	8.20	0.86	77.34	"
23.90	1.95	1.60	0.18	74.50	"

[a] The mass % of H_2O and the mol/kg H_2O values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used with 5 to 7 days being allowed for equilibration. The phosphate content was determined with the use of ammonium molybdate. The perchlorate content was determined gravimetrically but no further details are given. The composition of the solid phases was determined by the Schreinemakers' method.

SOURCE AND PURITY OF MATERIALS:

The Na_3PO_4 was reagent grade and the $NaClO_4$ is described as pure.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium tetraborate; $Na_2B_4O_7$; [1330-43-4] (3) Water; H_2O; [7732-18-5]	Babayan, G.G.; Darbinyan, G.M. *Arm. Khim. Zh.* 1972, 25, 482-7.
VARIABLES:	**PREPARED BY:**
Composition at 20°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-$Na_2B_4O_7$-H_2O system at 20°C.

Na_3PO_4		$Na_2B_4O_7$		H_2O	
mass %	mol/kg [a]	mass %	mol/kg [a]	mass % [a]	solid phase
2.46	0.16	4.80	0.26	92.74	$Na_2B_4O_7 \cdot 10H_2O$
3.10	0.20	4.30	0.23	92.60	"
3.09	0.20	4.49	0.24	92.42	"
4.27	0.28	4.50	0.24	91.23	"
5.09	0.34	3.90	0.21	91.01	solid solution
5.34	0.36	3.77	0.21	90.89	" "
5.83	0.39	3.57	0.20	90.60	" "
6.28	0.42	3.37	0.18	90.35	" "
7.39	0.50	3.40	0.19	89.21	" "
7.82	0.53	3.39	0.19	88.79	" "
8.18	0.56	3.21	0.18	88.61	" "
8.81	0.61	3.30	0.19	87.89	" "
9.34	0.65	3.15	0.18	87.51	" "
10.00	0.70	3.17	0.18	86.83	" "
11.75	0.84	3.24	0.19	85.01	" "
10.95	0.77	2.92	0.17	86.13	" "
11.68	0.83	2.60	0.15	85.72	" "
15.20	1.12	2.30	0.14	82.50	$Na_3PO_4 \cdot 12H_2O$
16.75	1.26	2.70	0.17	80.55	"
16.80	1.26	1.84	0.11	81.36	"

[a] These values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used with 5-7 days being allowed for equilibration. Phosphate content was determined by the use of ammonium molybdate. The tetraborate content was determined titrimetrically (no other details are given). The composition of the solid phases was determined by the Schreinemakers' method.

SOURCE AND PURITY OF MATERIALS:

The sodium phosphate and sodium tetraborate were reagent grade materials.

ESTIMATED ERROR:

No information is given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate, Na_3PO_4; [7601-54-9] (2) Copper phosphate; $Cu_3(PO_4)_2$; [30981-48-7] (3) Water; H_2O; [7732-18-5]	Druzhinin, I.G.; Tusheva, L.A. *Izv. Vuzov, Khim. Khim. Tekhnol.*, 1974, *17*, 1513-6.
VARIABLES:	**PREPARED BY:**
Composition at 25 and 50°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-$Cu_3(PO_4)_2$-H_2O system.

$Cu_3(PO_4)_2$		Na_3PO_4		
mass%	mol/kg[a]	mass%	mol/kg[a]	solid phase[b]
		temp. = 25°C.		
0.067	0.0018	----	----	A
0.062	0.0017	3.93	0.25	A + B
0.054	0.0015	6.05	0.39	B
0.038	0.0011	9.01	0.60	"
0.029	0.0009	13.41	0.94	B + C
----	----	13.42	0.94	C
		temp. = 50°C.		
0.21	0.0055	----	----	A
0.20	0.0054	4.02	0.25	"
0.19	0.0054	7.48	0.49	"
0.19	0.0054	7.49	0.49	B
0.07	0.0024	22.71	1.79	"
0.07	0.0024	22.71	1.79	B + D
0.07	0.0024	22.71	1.79	D
----	----	22.71	1.79	"

[a] The mol/kg H_2O values were calculated by the compiler.

[b] The solid phases are: A = $Cu_3(PO_4)_2$; B = $Na_3PO_4 \cdot Cu_3(PO_4)_2$; C = $Na_3PO_4 \cdot 12H_2O$; D = $Na_3PO_4 \cdot 10H_2O$.

COMMENT: At 50°C solid phase B hydrolyzes to CuO in the region where it crystallizes out.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Solid sodium phosphate was added to saturated solutions of copper phosphate and the mixtures were equilibrated for 8-10 hours. The copper content was determined as CuO. The phosphate content was determined colorimetrically and the sodium content was determined as sodium zinc uranyl acetate after separation with the aid of an ion exchanger.

SOURCE AND PURITY OF MATERIALS:

Both the phosphates were of reagent grade quality.

ESTIMATED ERROR:

The temperature was held constant to within ± 0.1 K.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Tripotassium phosphate; K_3PO_4; [7778-53-2] (3) Water; H_2O; [7732-18-5]	Manvelyan, M.G.; Galstyan, V.D.; Voskanyan, S.S. *Arm. Khim. Zh.* 1974, *26*, 810.
VARIABLES: Composition at 20°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

The only information given is the limiting concentrations for the existence of individual solid phases:

0-26.85 mass% K_3PO_4 in liquid phase--$Na_3PO_4 \cdot 12H_2O$ crystallizes

31.53-47-63 mass% K_3PO_4 in liquid phase--solid solutions

from 49.40 mass% K_3PO_4 in liquid phase--$K_3PO_4 \cdot 7H_2O$ crystallizes

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. The liquid phases were analyzed for Na_2O, K_2O and P_2O_5 (1).	No information is given.
	ESTIMATED ERROR: No information is given.
	REFERENCES: 1. Manvelyan, M.G.; Galstyan, V.D.; Voskanyan, S.S. *VINITI* 2323-74 Dep., 1974.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Sodium nitrite; $NaNO_2$; [7632-00-0] (3) Water; H_2O; [7732-18-5]	Procenko, P.I.; Ivleva, T.I.; Rubleva, V.V.; Berdyukova, V.A.; Edush, T.V. *Zh. Prikl. Khim.* 1975, *48*, 1055-9.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the $NaNO_2$-Na_3PO_4-H_2O system at 25°C.

concn of $NaNO_2$			concn of Na_3PO_4			
mass %	mol/1000 mol H_2O	mol/kg [a]	mass %	mol/1000 mol H_2O	mol/kg [a]	solid phase [b]
----	----------	----	12.24	15.3000	0.85	A
4.10	12.24	0.68	8.53	10.7130	0.60	"
11.90	37.43	2.08	5.08	6.7500	0.38	"
25.49	91.58	5.09	1.90	2.8757	0.16	"
36.92	156.31	8.68	1.46	2.5991	0.14	
44.15	206.20	11.46	0.71	1.3955	0.08	A + B
44.30	207.49	11.53	0.75	1.4867	0.08	A + B
44.55	210.65	11.70	0.28	0.5570	0.03	B
45.76	220.33	12.24	----	------	----	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = $Na_3PO_4 \cdot 12H_2O$; B = $NaNO_2$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method with the use of a water thermostat. About 10-12 hours were allowed for equilibration. Nitrite content was determined iodometrically. Phosphate content was determined gravimetrically by weighing as $Mg_2P_2O_7$. The composition of the solid phases was determined by Schreinemakers' method.	$NaNO_2$ was recrystallized and had a purity of 99.92%. $Na_3PO_4 \cdot 12H_2O$ was recrystallized to give a purity of 99.54% (calculated as anhydrous salt).
	ESTIMATED ERROR: The temperature was controlled to within 0.1K.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium tungstate; Na_2WO_4; [13472-45-2] (3) Water; H_2O; [7732-18-5]	Urusova, M.A.; Balyashko, V.M.; Rakova, N.N.; Zelikman, A.N.; Yevdokimova, G.V. *Zh. Neorg. Khim.* 1975, *20*, 2585-6.
VARIABLES: One temperature: 230°C Composition	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of the Na_3PO_4-Na_2WO_4-H_2O system at 230°C.

concn of Na_2WO_4		concn of Na_3PO_4		concn of H_2O	
mass %	mol/kg [a]	mass %	mol/kg [a]	mass % [a]	solid phase
----	----	18.9	1.42	81.1	Na_3PO_4
----	----	19.3	1.46	80.7	"
5.6	0.24	15.6	1.21	78.8	"
8.2	0.36	15.0	1.20	76.8	"
10.6	0.47	13.3	1.06	76.1	"
16.5	0.79	12.1	1.03	71.4	"
22.4	1.14	10.6	0.96	67.0	"
30.2	1.70	9.4	0.95	60.4	"
34.9	2.05	7.1	0.74	58.0	"
37.5	2.32	7.6	0.84	54.9	"
44.3	3.05	6.3	0.78	49.4	Na_3PO_4 + Na_2WO_4
44.7	3.14	6.8	0.85	48.5	"
44.3	3.04	6.2	0.76	49.5	"
45.1	3.07	4.9	0.60	50.0	Na_2WO_4
45.7	3.07	3.6	0.43	50.7	"
46.9	3.01	----	----	53.1	"

[a] These values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Isothermal method, self-constructed apparatus and sampling device. Analyses: phosphorus was determined as $Mg_2P_2O_7$ in presence of 3 g limonic acid per 1 g WO_3; tungstate was determined gravimetrically as WO_3 after removing of the phosphates.	Na_2WO_4 and Na_3PO_4 were prepared by drying of unspecified hydrates at 150-200°C and 250-300°C respectively.
	ESTIMATED ERROR: Nothing given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Gyunashyan, A.P.
(2) Disodium carbonate; Na_2CO_3; [497-19-8]	*Arm. Khim. Zh.* 1979, *32*, 868-73.
(3) Water; H_2O; [7732-18-5]	
VARIABLES:	**PREPARED BY:**
Composition at 0° and 20°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Solubility isotherms at 0° and 20°C are given only in graphical form.

The following numerical values are given only for solutions saturated with $Na_3PO_4 \cdot 12H_2O$ and $Na_2CO_3 \cdot 10H_2O$ simultaneously.

	concn of Na_3PO_4		concn of Na_2CO_3		concn of H_2O
t/°C	mass %	mol/kg [a]	mass %	mol/kg [a]	mass %
0	2.60	0.17	5.70	0.59	91.70
20	6.35	0.49	14.30	1.70	79.35

[a] The mol/kg H_2O values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Nothing is specified.	Nothing is specified.
	ESTIMATED ERROR:
	Nothing is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium silicate; Na_2SiO_3; [6834-92-0] (3) Water; H_2O; [7732-18-5]	Gyunashyan, A.P. *Arm. Khim. Zh.* 1979, *32*, 868-73.
VARIABLES: Composition at 20°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

The solubility isotherm for the Na_2SiO_3-Na_3PO_4-H_2O system at 20°C is given in graphical form. The composition of the solution in equilibrium with $Na_2SiO_3 \cdot 9H_2O$ and $Na_3PO_4 \cdot 12H_2O$ simultaneously is specified as 16.80 mass% Na_2SiO_3 (1.75 mol/kg--compiler) and 4.75 mass% Na_3PO_4 (0.37 mol/kg--compiler).

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
No details are given.	No information is given.
	ESTIMATED ERROR: No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Sodium fluoride; NaF; [7681-49-4] (3) Water; H_2O; [7732-18-5]	Roslyakova, O.N.; Petrov, M.R.; Zhikharev, M.I. *Zh. Neorg. Khim.* 1979, *24*, 206-8.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_3PO_4-NaF-H_2O system at 25°C.

NaF		Na_3PO_4		H_2O			
mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	d/kg m^{-3}	ν/m^2 s^{-1}	solid phase[b]
3.77	0.93	----	----	96.23	1.035	1.108	A
2.45	0.60	0.25	0.02	97.30	1.037	1.109	"
2.04	0.50	0.49	0.03	97.47	1.039	1.122	"
1.77	0.43	0.82	0.05	97.41	1.041	1.130	"
1.54	0.38	1.43	0.09	97.03	1.045	1.138	A + B
1.41	0.35	1.55	0.10	97.04	1.044	1.135	B
1.18	0.29	1.84	0.12	96.98	1.045	1.138	"
0.96	0.24	2.29	0.14	96.75	1.045	1.138	"
0.80	0.20	2.79	0.18	96.41	1.046	1.140	"
0.67	0.16	2.96	0.19	96.37	1.048	1.152	"
0.52	0.13	3.65	0.23	95.83	1.052	1.168	"
0.41	0.10	4.49	0.29	95.10	1.057	1.175	"
0.34	0.09	5.21	0.34	94.25	1.063	1.190	"
0.26	0.06	5.91	0.38	93.83	1.070	1.231	"
0.21	0.05	7.00	0.46	92.79	1.078	1.316	"
0.20	0.05	9.05	0.61	90.75	1.103	1.458	"
0.18	0.05	9.32	0.63	90.50	1.106	1.519	B + C
0.10	0.03	10.00	0.68	89.90	1.116	1.581	C
0.05	0.01	10.62	0.72	89.33	1.122	1.617	"
----	----	12.38	0.86	87.62	1.152	1.911	"

[a] These values were calculated by the compiler.

[b] The solid phases are: A = NaF; B = solid solution; C = Na_3PO_4 (probably $Na_3PO_4 \cdot 12H_2O$-compiler)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used. Equilibration required 8 to 10 hours. Fluoride content was determined colorimetrically (1), after distillation as H_2SiF_6. The phosphate content was determined colorimetrically with ammonium molybdate and reduction of the complex formed with ascorbic acid. The composition of the solid phases was determined microscopically and with the use of the Schreinemakers' method.	No information is given.
	ESTIMATED ERROR: Nothing is stated.
	REFERENCES: 1. Kukisheva, T.N.; Sinicyna, E.S.; Efimova, N.S. *Zh. Anal. Khim.* 1971, *26*, 954.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Disodium sulfate; Na_2SO_4; [7757-82-6] (4) Water, H_2O, [7732-18-5]	Schroeder, W.C.; Berk, A.A.; Gabriel, A. *J. Am. Chem. Soc.* 1937, 59, 1783-90.
VARIABLES: Composition and temperature.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the Na_2SO_4-Na_3PO_4-NaOH-H_2O system.

NaOH			Na_3PO_4			Na_2SO_4			H_2O
w[a]	mass%[b]	mol/kg[b]	w[a]	mass%[b]	mol/kg[b]	w[a]	mass%[b]	mol/kg[b]	mass%[b]
				temp. = 150°C					
7.8	5.59	1.95	3.0	2.15	0.18	28.7	20.57	2.02	71.68
7.9	5.55	1.98	6.0	4.22	0.36	28.4	19.96	2.00	70.27
8.0	5.53	2.00	8.6	5.94	0.52	28.1	19.42	1.98	69.11
7.6	5.07	1.90	14.7	9.80	0.90	27.7	18.45	1.95	66.67
19.1	13.84	4.78	2.9	2.10	0.18	16.0	11.59	1.13	72.46
19.8	13.98	4.95	5.9	4.17	0.36	15.9	11.29	1.12	70.62
19.5	13.53	4.88	8.7	6.04	0.53	15.9	11.03	1.12	69.40
19.8	13.39	4.95	12.2	8.25	0.74	15.9	10.75	1.12	67.61
				temp. = 250°C					
8.1	5.50	2.02	1.5	1.02	0.09	37.7	25.59	2.65	67.89
8.0	5.33	2.00	3.0	2.00	0.18	39.1	26.05	2.75	66.62
8.1	5.36	2.02	3.7	2.45	0.22	39.3	26.01	2.77	66.18
7.9	5.22	1.98	3.8	2.51	0.23	39.5	26.12	2.78	66.14
8.1	5.35	2.02	3.8	2.51	0.23	39.4	26.04	2.77	66.09
8.2	5.60	2.05	4.0	2.73	0.24	34.1	23.31	2.40	68.35
8.4	6.14	2.10	3.5	2.56	0.21	25.0	18.26	1.76	73.05
8.4	6.47	2.10	3.4	2.62	0.21	18.0	13.87	1.27	77.04
8.4	6.84	2.10	3.3	2.69	0.20	11.0	8.96	0.77	81.50

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A high temperature bomb was used. The samples were withdrawn at the operating temperature. The time allowed for equilibration is not given. Phosphate determinations were made colorimetrically using aminonaphtholsulfonic acid (1). Hydroxide content was determined by titration to the methyl red end point (2 equivalents/mol of phosphate present were deducted). Sulfate was determined gravimetrically as $BaSO_4$.

SOURCE AND PURITY OF MATERIALS:

Merck chemically pure $Na_3PO_4 \cdot 12H_2O$ was used. The actual phosphate content of this material was determined by analysis but the results are not reported. If necessary, the dodecahydrate was dried at 120°C to give approximately the monohydrate, or it was recrystallized at 250°C to give the anhydrous salt. No other information is given.

ESTIMATED ERROR:

The error in the phosphate determination is less than 1%. No other details are given.

REFERENCES:

1. Fiske, C.H.; Subbarow, J.T. *J. Biol. Chem.* 1925, *66*, 375.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Schroeder, W.C.; Berk, A.A.; Gabriel, A.
(2) Sodium hydroxide, NaOH; [1310-73-2]	*J. Am. Chem. Soc.* 1937, 59, 1783-90.
(3) Disodium sulfate; Na_2SO_4, [7757-82-6]	
(4) Water, H_2O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the Na_2SO_4-Na_3PO_4-NaOH-H_2O system.

NaOH			Na_3PO_4			Na_2SO_4			H_2O
w[a]	mass%[b]	mol/kg[b]	w[a]	mass%[b]	mol/kg[b]	w[a]	mass%[b]	mol/kg[b]	mass%[b]
				temp. = 250°C					
8.3	7.31	2.08	2.7	2.38	0.16	2.6	2.29	0.18	88.03
8.4	7.40	2.10	4.9	4.32	0.30	0.2	0.18	0.01	88.10
20.0	12.86	5.00	2.7	1.74	0.16	32.8	21.09	2.31	64.31
19.8	12.74	4.95	2.8	1.80	0.17	32.8	21.11	2.31	64.35
20.0	12.93	5.00	2.9	1.87	0.18	31.8[c]	20.56	2.24	64.64
20.6	13.79	5.15	2.7	1.81	0.16	26.1[c]	17.47	1.84	66.93
20.5	14.52	5.12	2.7	1.91	0.16	18.0	12.75	1.27	70.82
20.7	15.40	5.17	2.7	2.01	0.16	11.0[c]	8.17	0.78	74.40
20.6	15.98	5.15	2.7	2.09	0.16	5.6[c]	4.34	0.39	77.58
				temp. = 350°C					
8.0	6.17	2.00	0.6	0.46	0.04	21.0[c]	16.20	1.48	77.16
8.0	6.17	2.00	0.6	0.46	0.04	21.0[c]	16.20	1.48	77.16
8.0	6.23	2.00	0.4	0.31	0.02	20.0[c]	15.58	1.41	77.88
8.0	6.55	2.00	0.4	0.33	0.02	13.8[c]	11.29	0.97	81.83
8.0	7.02	2.00	0.3	0.26	0.02	5.7[c]	5.00	0.40	87.72
8.4	7.46	2.10	0.3	0.27	0.02	3.9[c]	3.46	0.27	88.81
8.0	7.26	2.00	0.3	0.27	0.02	1.9[c]	1.72	0.13	90.74
21.0	11.85	5.25	1.9	1.07	0.12	54.3[c]	30.64	3.82	56.43
21.0	11.73	5.25	2.6	1.45	0.16	55.4[c]	30.95	3.90	55.86
21.0	11.71	5.25	2.7	1.50	0.16	56.6[c]	31.01	3.91	55.77
21.0	11.84	5.25	3.1	1.75	0.19	53.3[c]	30.04	3.75	56.37
21.3	12.52	5.33	2.2	1.29	0.13	46.6[c]	27.40	3.28	58.79
21.0	13.60	5.25	1.8	1.16	0.11	31.6[c]	20.47	2.22	64.77
21.0	14.72	5.25	1.4	0.98	0.08	20.3[c]	14.22	1.43	70.08
21.0	15.61	5.25	1.2	0.89	0.07	12.3[c]	9.14	0.86	74.35
21.0	16.63	5.25	1.0	0.79	0.06	4.3[c]	3.40	0.30	79.18
21.0	17.06	5.25	1.4	1.14	0.08	0.7	0.57	0.05	81.23

[a] This concentration is expressed as g/100g H_2O.

[b] These values were calculated by the compiler.

[c] These values were calculated by the authors from the initial concentrations.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Disodium carbonate; Na_2CO_3; [497-19-8] (3) Sodium hydroxide; NaOH; [1310-73-2] (4) Water; H_2O, [7732-18-5]	Kobe, K.A.; Leipper, A. *Ind. Eng. Chem.* 1940, *32*, 198-203.
VARIABLES: Temperature, ratio of Na_3PO_4/Na_2CO_3 at a fixed ratio of $Na_3PO_4/NaOH$ = 7/1.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the $Na_3PO_4 \cdot 1/7NaOH$-Na_2CO_3-H_2O system.[a]

	concn of $Na_3PO_4 \cdot 1/7NaOH$			concn of Na_2CO_3			solid phase[d]
t/°C	g/kg[b]	mass %[c]	mol/kg[c]	g/kg[b]	mass %[c]	mol/kg[c]	
-2.48	1.8	1.68	0.10	5.5	5.12	0.52	A + B
-2.10	0.0	0.0	0.0	6.1	5.75	0.58	B
-1.21	4.2	4.03	0.27	0.0	0.0	0.0	A
0	4.58	4.38	0.27	0.00	0.00	0.00	A
	2.58	2.37	0.15	6.43	5.90	0.61	A + B
	0.00	0.00	0.00	6.93	6.48	6.65	B
25	11.9	10.63	0.70	0.00	0.00	0.00	A
	10.7	9.36	0.63	3.60	3.15	0.34	"
	9.30	8.00	0.55	6.96	5.99	0.66	"
	8.05	6.65	0.47	13.0	10.74	1.23	"
	7.01	5.54	0.41	19.4	15.35	1.83	"
	5.79	4.33	0.34	28.0	20.93	2.64	A + B
	3.44	2.61	0.20	28.5	21.60	2.69	B
	0.00	0.00	0.00	29.4	22.72	2.77	"
40	20.8	17.22	1.22	0.00	0.00	0.00	A
	15.1	11.60	0.89	15.1	11.60	1.42	"
	11.6	7.91	0.68	35.0	23.87	3.30	"
	11.1	7.20	0.65	43.1	27.95	4.07	A + C
	0.0	0.0	0.0	49.2	32.98	4.64	C

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AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The isothermal method was used. Samples were withdrawn through a coarse filter paper into a weighed 10 ml pipet, weighed, diluted and analyzed acidimetrically (1). The cryohydric points of the system were found by adding the solid salts to ice and measuring the temperature with a Beckmann thermometer. When a constant minimum value was reached, samples were withdrawn and analyzed.

SOURCE AND PURITY OF MATERIALS:

Baker's sodium phosphate was used. Analysis showed it had a constant composition of $Na_3PO_4 \cdot 1/7NaOH$. The Na_2CO_3 was Baker's anhydrous. For determinations at 0° and 25°C the decahydrate was prepared.

ESTIMATED ERROR:

The temperature regulation was: 0 ± 0.05°C; 25 ± 0.05°C; 40 ± 0.1°C; 60 ± 0.1°C; 80 ± 0.3°C; 100 ± 0.3°C. No other details are given.

REFERENCES:

1. Smith, J.H. *J. Soc. Chem. Ind.* 1917, *36*, 415.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9]	Kobe, K.A., Leipper, A.
(2) Disodium carbonate; Na_2CO_3; [497-19-8]	*Ind. Eng. Chem.* 1940, *32*, 198-203.
(3) Sodium hydroxide; NaOH, [1310-73-2]	
(4) Water, H_2O, [7732-18-5]	

EXPERIMENTAL VALUES cont'd.

Composition of saturated solutions in the $Na_3PO_4 \cdot 1/7NaOH$-Na_2CO_3-H_2O system.[a]

	concn of $Na_3PO_4 \cdot 1/7NaOH$			concn of Na_2CO_3			
t/°C	g/kg[b]	mass %[c]	mol/kg[c]	g/kg[b]	mass %[c]	mol/kg[c]	solid phase[d]
60	41.8	29.48	2.46	0.0	0.0	0.0	A
	36.6	24.78	2.15	11.1	7.52	1.05	"
	31.0	20.06	1.82	23.5	15.21	2.22	"
	28.0	17.59	1.65	31.2	19.60	2.94	A + C
	11.4	7.53	0.67	40.0	26.42	3.77	C
	0.0	0.0	0.0	46.3	31.65	4.37	"
80	63.8	38.95	3.76	0.0	0.0	0.0	A
	52.3	30.35	3.08	20.0	11.61	1.89	A + C
	0.0	0.0	0.0	45.1	31.08	4.25	C
100	90.0	47.36	5.30	0.0	0.0	0.0	A
	88.0	44.24	5.18	10.9	5.48	1.03	A + C
	67.1	36.37	3.95	17.4	9.43	1.64	C
	62.1	34.35	3.66	18.7	10.34	1.76	"
	39.0	23.40	2.30	27.7	16.62	2.61	"
	23.0	14.54	1.35	35.2	22.25	3.32	"
	0.0	0.0	0.0	44.8	30.94	4.23	"

[a] For more information on the phosphate component see the Critical Evaluation.

[b] This is an obvious error. According to the compiler it should be g/100 g H_2O.

[c] These values were calculated by the compiler on the assumption given in footnote [b].

[d] The solid phases are: A = Na_3PO_4 (the NaOH and H_2O content are not specified); B = $Na_2CO_3 \cdot 10H_2O$, C = $Na_2CO_3 \cdot H_2O$.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4, [7601-54-9] (2) Sodium aluminate; $NaAlO_2$; [1302-42-7] (3) Sodium vanadate; $NaVO_3$; [13718-23-8] (4) Sodium hydroxide; NaOH; [1310-73-2] (5) Water; H_2O; [7732-18-5]	Abduragimova, R.A.; Rza-Zade, P.F.; Abduragimov, A.A. *Dokl. Akad. Nauk Azerb. SSR* **1971**, *27*, 41-5.
VARIABLES: Composition at 25°C and one ratio of $NaAlO_2/NaOH$ = 1.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the $(NaAlO_2 + NaOH)$-$NaVO_3$-Na_3PO_4-H_2O system at 25°C.

$NaAlO_2$ + NaOH		$NaVO_3$		Na_3PO_4		H_2O	
mass%	mol/kg[b]	mass%	mol/kg[b]	mass%	mol/kg[b]	mass%[b]	solid phase[a]
----	----	17.42	1.73	----	----	82.58	A
----	----	----	----	12.30	0.85	87.70	B
----	----	12.05	1.19	5.21	0.38	82.74	B + C
----	----	17.00	1.72	1.92	0.14	81.08	A + C
32.64	4.09	1.99	0.25	----	----	65.37	A + D
29.60	3.45	----	----	0.66	0.06	69.74	B + E
42.17	6.00	0.22	0.03	----	----	57.61	D
40.77	5.69	0.49	0.07	----	----	58.74	"
46.48	7.16	----	----	0.26	0.03	53.26	D + E
42.11	6.00	----	----	0.36	0.04	57.53	"
40.09	5.54	0.29	0.04	0.26	0.03	59.36	"
34.27	4.32	0.44	0.06	0.18	0.02	65.11	"
30.13	3.58	0.59	0.07	0.21	0.02	69.07	"
----	----	12.49	1.23	4.35	0.32	83.16	C
----	----	16.01	1.59	1.31	0.10	82.68	"
----	----	1.00	0.09	9.03	0.61	89.97	B
----	----	4.43	0.40	5.41	0.36	90.16	"
----	----	10.82	1.05	4.40	0.32	84.78	"
1.98	0.20	13.61	1.35	1.49	0.11	82.92	A + C + F
21.36	2.27	1.18	0.12	0.19	0.01	77.27	A + F
15.44	1.55	2.40	0.24	0.26	0.02	81.90	"

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AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The isothermal method was used with metallic vessels having mechanical stirrers. The time for equilibration was 155 hours. Saturated solutions were sampled by filtration and analyzed for Na_2O, Al_2O_3, V_2O_5 and P_2O_5 by volumetric, gravimetric, photocolorimetric and nephelometric methods. The composition of the solid phase was determined by Schreinemakers' method.	No information is given.
	ESTIMATED ERROR: Nothing is stated.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Trisodium phosphate; Na_3PO_4; [7601-54-9] (2) Sodium aluminate; $NaAlO_2$; [1302-42-7] (3) Sodium vanadate; $NaVO_3$; [13718-23-8] (4) Sodium hydroxide; NaOH; [1310-73-2] (5) Water; H_2O; [7732-18-5]	Abduragimova, R.A.; Rza-Zade, P.F.; Abduragimov, A.A. *Dokl. Akad. Nauk Azerb. SSR* 1971, 27, 41-5.

EXPERIMENTAL VALUES cont'd:

Composition of saturated solutions in the $(NaAlO_2 + NaOH)$-$NaVO_3$-Na_3PO_4-H_2O system at 25°C.

$NaAlO_2$ + NaOH		$NaVO_3$		Na_3PO_4		H_2O	solid[a]
mass%	mol/kg[b]	mass%	mol/kg[b]	mass%	mol/kg[b]	mass%[b]	phase
0.84	0.08	9.20	0.88	4.16	0.29	85.80	B + F
0.29	0.02	0.19	0.02	7.34	0.48	92.18	"
23.18	2.51	0.83	0.09	0.27	0.02	75.72	E + F + B
19.93	2.06	0.61	0.06	0.22	0.02	79.24	B + F
13.04	1.24	0.14	0.01	0.41	0.03	86.41	"
1.81	0.17	10.61	1.01	1.09	0.08	86.49	C + F
1.01	0.09	8.25	0.77	2.60	0.18	88.14	"
0.93	0.09	7.00	0.65	4.09	0.28	87.98	B + C
0.63	0.06	1.51	0.09	5.49	0.36	92.37	"

[a] The solid phases are: A = $NaVO_3 \cdot 2H_2O$; B = $Na_3PO_4 \cdot 12H_2O$; C = $4Na_2O \cdot P_2O_5 \cdot V_2O_5 \cdot 30H_2O$; D = $Al_2O_3 \cdot 2Na_2O \cdot 10H_2O$; E = $Al_2O_3 \cdot 2.5Na_2O \cdot 14H_2O$; F = $3Al_2O_3 \cdot 4Na_2O \cdot P_2O_5 \cdot 15H_2O$.

[b] These values were calculated by the compiler.