

COMPONENTS:				ORIGINAL MEASUREMENTS:			
(1) Sodium dihydrogenphosphate; NaH ₂ PO ₄ ; [7558-80-7]				Paravano, N.; Mieli, A.			
(2) Phosphoric acid; H ₃ PO ₄ ; [7664-38-2]				Gazz. Chim. Ital. 1908, 38, 535-44.			
(3) Water; H ₂ O; [7732-18-5]							
VARIABLES:				PREPARED BY:			
Composition and temperature. One ratio NaH ₂ PO ₄ /H ₃ PO ₄ = 1.				J. Eysseltová			
EXPERIMENTAL VALUES:							
Saturation temperatures of solutions of NaH ₂ PO ₄ ·H ₃ PO ₄ in water.							
	NaH ₂ PO ₄ ·H ₃ PO ₄		NaH ₂ PO ₄ ^a		H ₃ PO ₄ ^a		
t/°C.	mass%	mol%	mass%	mol/kg	mass%	mol/kg	solid phase ^b
0	0	0	0	0	0	0	ice
-5.7	20.77	1.81	11.43	1.20	9.34	1.20	"
-7.9	26.92	2.95	14.82	1.69	12.10	1.69	"
-11.4	34.15	4.11	18.80	2.38	15.35	2.38	"
-38 ^c	56.66	9.75	31.19	6.00	25.47	6.00	"
----	70.52	16.50	38.82	10.97	31.70	10.97	
34.0	80.46	25.39	44.29	18.89	36.17	18.89	NaH ₂ PO ₄
41.0	81.82	27.11	45.04	20.64	36.78	20.64	" ₂
51.7	83.68	29.75	46.06	23.52	37.61	23.52	"
79.7	87.48	36.62	48.16	32.05	39.32	32.05	"
85.0	88.65	39.22	48.80	35.83	39.85	35.83	"
101.7	91.47	46.98	50.35	49.18	41.12	49.18	NaH ₂ PO ₄ ·H ₃ PO ₄
104.5	92.67	51.09	51.01	57.99	41.66	57.99	"
110.0	95.79	65.28	52.73	87.15	43.06	87.15	"
110.7	95.86	65.68	52.77	106.2	43.09	106.2	"
119.0	97.99	80.12	53.94	223.6	44.05	223.6	"
126.5	100	100	55.04	----	44.96	----	"
^a These values were calculated by the compiler.							
^b The phases were not given by the authors. The compiler derived them from a graph.							
^c The temperature was about -38°C.							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Saturation temperatures were determined visually as the temperature at which the last crystal disappeared.				NaH ₂ PO ₄ ·H ₃ PO ₄ was prepared from an equimolar mixture of concentrated solutions of NaH ₂ PO ₄ and H ₃ PO ₄ by slow crystallization. The analysis was:			
				found		calculated	
				P ₂ O ₅		65.37% 65.12%	
				Na ₂ O		14.41 14.23	
ESTIMATED ERROR:							
Nothing is stated.							
REFERENCES:							

COMPONENTS: (1) Trisodium phosphate; Na ₃ PO ₄ ; [7601-54-9] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Schroeder, W.C.; Berk, A.A.; Gabriel, A. <i>J. Am. Chem. Soc.</i> <u>1937</u> , 59, 1783-90.																																																																																																																
VARIABLES: Three temperatures: 150, 250, 350°C Composition	PREPARED BY: J. Eysseľtová																																																																																																																
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility of sodium phosphate in sodium hydroxide solutions.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">concn of NaOH</th> <th colspan="3" style="text-align: center;">concn of Na₃PO₄</th> <th style="text-align: center;">C_{H₂O}</th> </tr> <tr> <th style="text-align: center;">g/100g H₂O</th> <th style="text-align: center;">mass%^a</th> <th style="text-align: center;">mol/kg^a</th> <th style="text-align: center;">g/100g H₂O</th> <th style="text-align: center;">mass%^a</th> <th style="text-align: center;">mol/kg^a</th> <th style="text-align: center;">mass%^a</th> </tr> </thead> <tbody> <tr> <td colspan="7" style="text-align: center;">temp = 150°C.</td> </tr> <tr> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">82</td> <td style="text-align: center;">45.05</td> <td style="text-align: center;">5.00</td> <td style="text-align: center;">54.95</td> </tr> <tr> <td style="text-align: center;">8.2</td> <td style="text-align: center;">5.21</td> <td style="text-align: center;">2.07</td> <td style="text-align: center;">49.0</td> <td style="text-align: center;">31.77</td> <td style="text-align: center;">3.07</td> <td style="text-align: center;">63.01</td> </tr> <tr> <td style="text-align: center;">20.0</td> <td style="text-align: center;">14.22</td> <td style="text-align: center;">5.04</td> <td style="text-align: center;">20.6</td> <td style="text-align: center;">15.28</td> <td style="text-align: center;">1.32</td> <td style="text-align: center;">70.50</td> </tr> <tr> <td colspan="7" style="text-align: center;">temp = 250°C.</td> </tr> <tr> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">8.6</td> <td style="text-align: center;">7.92</td> <td style="text-align: center;">0.52</td> <td style="text-align: center;">92.08</td> </tr> <tr> <td style="text-align: center;">8.2</td> <td style="text-align: center;">7.12</td> <td style="text-align: center;">2.05</td> <td style="text-align: center;">7.0</td> <td style="text-align: center;">6.13</td> <td style="text-align: center;">0.43</td> <td style="text-align: center;">86.75</td> </tr> <tr> <td style="text-align: center;">20.6</td> <td style="text-align: center;">16.34</td> <td style="text-align: center;">5.16</td> <td style="text-align: center;">5.5</td> <td style="text-align: center;">4.51</td> <td style="text-align: center;">0.35</td> <td style="text-align: center;">79.15</td> </tr> <tr> <td style="text-align: center;">29.5</td> <td style="text-align: center;">21.82</td> <td style="text-align: center;">7.40</td> <td style="text-align: center;">5.7</td> <td style="text-align: center;">4.47</td> <td style="text-align: center;">0.37</td> <td style="text-align: center;">73.71</td> </tr> <tr> <td colspan="7" style="text-align: center;">temp = 350°C.</td> </tr> <tr> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">0.15</td> <td style="text-align: center;">0.15</td> <td style="text-align: center;">0.01</td> <td style="text-align: center;">99.85</td> </tr> <tr> <td style="text-align: center;">8.0</td> <td style="text-align: center;">7.38</td> <td style="text-align: center;">2.00</td> <td style="text-align: center;">0.44</td> <td style="text-align: center;">0.41</td> <td style="text-align: center;">0.03</td> <td style="text-align: center;">92.21</td> </tr> <tr> <td style="text-align: center;">21.9</td> <td style="text-align: center;">17.68</td> <td style="text-align: center;">5.48</td> <td style="text-align: center;">2.0</td> <td style="text-align: center;">1.67</td> <td style="text-align: center;">0.13</td> <td style="text-align: center;">80.65</td> </tr> <tr> <td style="text-align: center;">21.3</td> <td style="text-align: center;">17.25</td> <td style="text-align: center;">5.33</td> <td style="text-align: center;">2.2</td> <td style="text-align: center;">1.84</td> <td style="text-align: center;">0.14</td> <td style="text-align: center;">80.91</td> </tr> </tbody> </table> <p>^a All these values were calculated by the compiler.</p>		concn of NaOH			concn of Na ₃ PO ₄			C _{H₂O}	g/100g H ₂ O	mass% ^a	mol/kg ^a	g/100g H ₂ O	mass% ^a	mol/kg ^a	mass% ^a	temp = 150°C.							----	----	----	82	45.05	5.00	54.95	8.2	5.21	2.07	49.0	31.77	3.07	63.01	20.0	14.22	5.04	20.6	15.28	1.32	70.50	temp = 250°C.							----	----	----	8.6	7.92	0.52	92.08	8.2	7.12	2.05	7.0	6.13	0.43	86.75	20.6	16.34	5.16	5.5	4.51	0.35	79.15	29.5	21.82	7.40	5.7	4.47	0.37	73.71	temp = 350°C.							----	----	----	0.15	0.15	0.01	99.85	8.0	7.38	2.00	0.44	0.41	0.03	92.21	21.9	17.68	5.48	2.0	1.67	0.13	80.65	21.3	17.25	5.33	2.2	1.84	0.14	80.91
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METHOD/APPARATUS/PROCEDURE: Self-constructed high temperature solubility bomb with sampler ensuring the sampling at the operating temperature. The time of equilibration is not specified. Phosphate determinations were made by a colorimetric method using aminonaphthol-sulfonic acid (1). Hydroxide was determined by titration to the methyl red end-point (2 equivalents/l mol of phosphate present being deducted).	SOURCE AND PURITY OF MATERIALS: Merck chemically pure Na ₃ PO ₄ ·12H ₂ O was used. The actual phosphate content of this material was determined by analysis (the results not given - compiler). If necessary, the dodecahydrate was dried at 120°C to give approximately the monohydrate or was recrystallized at 250°C to give anhydrous salt. NaOH - nothing specified.																																																																																																																
ESTIMATED ERROR: Phosphate determination: the error not greater than 1%. Nothing else given.																																																																																																																	
REFERENCES: 1. Fiske, C.H.; Subbarow, J.T. <i>J. Biol. Chem.</i> <u>1925</u> , 66, 375.																																																																																																																	

COMPONENTS:				ORIGINAL MEASUREMENTS:					
(1) Disodium hydrogenphosphate; Na ₂ HPO ₄ ; [7558-79-4]				Ravich, M.I.; Shcherbakova, L.G. <i>Izv. Sektora Fiz. Khim. Analiza, Inst. Obsch. Neorg. Khim. Akad. Nauk SSSR 1955, 26, 248-58.</i>					
(2) Sodium hydroxide; NaOH; [1310-73-2]									
(3) Water; H ₂ O; [7732-18-5]									
VARIABLES:				PREPARED BY:					
Composition at 523, 573 and 638 K.				J. Eysseltová					
EXPERIMENTAL VALUES:									
Part 1. Composition of the saturated liquid phase in the Na ₂ HPO ₄ -NaOH-H ₂ O system.									
g ion/100 g soln		g ion/100 g ion		mass% ^a			mol/kg ^a		
PO ₄ ³⁻	Na ⁺	PO ₄ ³⁻	Na ⁺	Na ₂ HPO ₄	NaOH	H ₂ O	Na ₂ HPO ₄	NaOH	
temp = 638 K									
0.0092	0.0185	33.3	66.7	1.31	0.004	98.67	0.09	0.001	
0.0044	0.0089	32.9	67.1	0.62	0.004	99.37	0.04	0.001	
0.0025	0.0055	31.1	68.9	0.36	0.02	99.62	0.02	0.005	
0.0035	0.0081	30.4	69.6	0.50	0.04	99.45	0.04	0.01	
0.0036	0.0095	27.8	72.2	0.51	0.09	99.40	0.04	0.02	
0.0020	0.0058	25.8	74.2	0.28	0.07	99.64	0.02	0.02	
0.0022	0.0081	21.6	78.4	0.31	0.15	99.54	0.02	0.04	
0.0016	0.0076	17.4	82.6	0.23	0.18	99.60	0.02	0.04	
0.0017	0.0116	12.5	87.5	0.24	0.33	99.43	0.02	0.08	
0.0010	0.0277	3.6	96.4	0.14	1.03	98.83	0.01	0.26	
temp = 573 K									
0.0202	0.0542	27.1	72.9	2.88	0.55	96.58	0.21	0.14	
0.0228	0.0621	26.8	73.2	3.24	0.66	96.10	0.24	0.17	
0.0185	0.0524	26.1	73.9	2.63	0.62	96.75	0.19	0.16	
0.0166	0.0525 ^b	24.0	74.0	2.36	0.77	96.87	0.17	0.20	
0.0102	0.0468 ^b	17.9	82.1	1.45	1.06	97.49	0.10	0.27	
0.0067	0.0535	11.2	88.8	0.95	1.60	97.44	0.07	0.41	
0.0057	0.0812	6.5	93.5	0.81	2.80	96.40	0.06	0.72	
0.0067	0.1112	5.7	94.3	0.95	3.91	95.13	0.07	1.03	
(continued next page)									
AUXILIARY INFORMATION									
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:					
The apparatus has been described previously (1). Samples of the saturated liquid phase were removed after 1 to 2 hours of equilibration, filtered through a silver wire mat, and analyzed volumetrically (2). The samples were also analyzed gravimetrically with phosphate being determined as Mg ₂ P ₂ O ₇ and sodium as sodium zincuranylacetate.				Chemically pure Na ₂ HPO ₄ was recrystallized. The NaOH was supplied by a solution, about 50%, of chemically pure NaOH. It contained less than 0.1% Na ₂ CO ₃ .					
				ESTIMATED ERROR:					
				No indication is given.					
REFERENCES:									
1. Ravich, M.I.; Borovaya, F.E.; Luk'yanova, E.I.; Elenevskaya, V.M. <i>Izv. Sektora Fiz.-Khim. Analiza, Inst. Obsch. Neorg. Khim. Akad. Nauk SSSR 1954, 24, 280.</i>									
2. <i>Reaktivu Neorganicheskie. Sbornik Tekhnicheskikh Uslovii (Inorganic Reactives Technical Conditions)</i> , Standartgiz, 1951, p. 141 (TU MKhP, 1963-49).									

COMPONENTS	ORIGINAL MEASUREMENTS
(1) Disodium hydrogenphosphate; Na ₂ HPO ₄ ; [7558-79-4]	Ravich, M.I.; Shcherbakova, L.G.
(2) Sodium hydroxide; NaOH; [1310-73-2]	<i>Izv. Sektora Fiz. Khim. Analiza, Inst. Obsch. Neorg. Khim. Akad. Nauk SSSR</i> 1955, 26, 248-58.
(3) Water; H ₂ O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd.

g ion/100 g soln		g ion/100 g ion		mass% ^a			mol/kg ^a	
PO ₄ ³⁻	Na ⁺	PO ₄ ³⁻	Na ⁺	Na ₂ HPO ₄	NaOH	H ₂ O	Na ₂ HPO ₄	NaOH
temp = 523 K								
0.0463	0.1666	21.8	78.2	6.58	2.96	90.46	0.51	0.82

^aThese values were calculated by the compiler.

^bThis equilibrium was established by starting with a supersaturated solution.

Part 2. Composition of saturated solutions for systems in which the beginning P/Na ratio is 1/3.

g ion/100 g soln		g ion/100 g ion		mass% ^a			mol/kg ^a	
PO ₄ ³⁻	Na ⁺	PO ₄ ³⁻	Na ⁺	Na ₂ HPO ₄	NaOH	H ₂ O	Na ₂ HPO ₄	NaOH
temp = 638 K								
0.0014	0.0073	16.2	83.8	0.20	0.18	99.62	0.01	0.04
0.0010	0.0079	11.8	88.2	0.14	0.14	99.62	0.01	0.06
0.0010	0.0082	11.4	88.6	0.14	0.25	99.61	0.01	0.06
0.0008	0.0086	8.3	91.7	0.11	0.28	99.61	0.01	0.07
temp = 573 K								
0.0147	0.0475	23.6	76.4	2.09	0.72	97.19	0.15	0.19
0.0146	0.0473	23.6	76.4	2.07	0.72	97.20	0.15	0.19
0.0132	0.0485	21.4	78.6	1.88	0.88	97.24	0.14	0.23
0.0123	0.0483	20.3	79.7 ^b	1.75	0.95	97.30	0.13	0.24
0.0112	0.0446	20.1	79.9 ^b	1.59	0.89	97.52	0.11	0.26
0.0118	0.0491	19.4	80.6	1.68	1.02	97.30	0.12	0.26
0.0098	0.0507	16.2	83.8	1.39	1.24	97.36	0.10	0.32
temp = 523 K								
0.0542	0.1641	24.8	75.2	7.70	2.23	90.07	0.60	0.62
0.0484	0.1527	24.0	76.0	6.88	2.24	90.88	0.53	0.61
0.0480	0.2547	23.7	76.3	6.82	2.35	90.83	0.53	0.65

^aThese values were calculated by the compiler.

^bEquilibrium was established by starting with a supersaturated solution.

COMPONENTS:		ORIGINAL MEASUREMENTS:			
(1) Sodium dihydrogenphosphate; NaH_2PO_4 ; [7558-80-7] (2) Phosphoric acid; H_3PO_4 ; [7664-38-2] (3) Water; H_2O , [7732-18-5]		Lilich, L.S.; Vanjusheva, L.N.; Chernykh, L.V. <i>Zh. Neorg. Khim.</i> 1971, 16, 2782-9.			
VARIABLES:		PREPARED BY:			
Composition and temperature.		J. Eysseltová			
EXPERIMENTAL VALUES:					
Solubility in the $\text{NaH}_2\text{PO}_4-\text{H}_3\text{PO}_4-\text{H}_2\text{O}$ system.					
NaH_2PO_4		H_3PO_4		H_2O	
mass%	mol/kg	mass%	mol/kg	mass% ^a	solid phase
temp. = 0°C.					
38.7	5.26	----	----	62.3	$\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$
37.00	5.30	5.00	0.90	58.0	"
33.20	5.3	14.50	2.8	52.3	"
33.0	5.8	19.6	4.2	47.4	"
33.6	6.9	25.7	6.5	40.7	"
34.5	7.8	28.8	8.0	36.7	"
36.9	10.5	33.9	11.9	29.2	"
39.2	13.6	36.9	15.7	23.9	"
37.9	13.6	38.8	17.0	23.3	$\text{NaH}_2\text{PO}_4 \cdot \text{H}_3\text{PO}_4$
29.7	10.1	45.8	19.0	24.5	"
20.4	7.2	55.9	24.1	23.7	"
17.8	6.8	60.4	28.3	21.8	"
8.1	3.7	73.9	41.9	18.0	"
5.4	2.8	78.6	49.9	16.0	"
3.9	2.2	81.2	55.6	14.9	"
(continued next page)					
AUXILIARY INFORMATION					
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURITY OF MATERIALS:		
The isothermal method was used with equilibrium being reached in 10-12 hours. Phosphoric acid was determined alkalimetrically, the sum of H_3PO_4 and NaH_2PO_4 was determined alkalimetrically after ion exchange. The composition of the solid phases was determined by Schreinemakers' method. In the starting materials, H_3PO_4 was determined gravimetrically and alkalimetrically using bromocresolgreen as indicator. NaH_2PO_4 was determined alkalimetrically after ion exchange using ionex KU-2.			Chemically pure 90% H_3PO_4 was used. The NaH_2PO_4 was dried at 80-100°C.		
			ESTIMATED ERROR: The analyses had a precision of $\pm 0.8\%$ relatively. The temperature control was: $0 \pm 0.1^\circ\text{C}$; $25 \pm 0.05^\circ\text{C}$; $50 \pm 0.1^\circ\text{C}$.		
			REFERENCES:		

COMPONENTS:

- (1) Sodium dihydrogenphosphate; NaH₂PO₄; [7558-80-7]
 (2) Phosphoric acid; H₃PO₄; [7664-38-2]
 (3) Water; H₂O; [7732-18-5]

ORIGINAL MEASUREMENTS:

Lilich, L.S.; Vanjusheva, L.N.;
 Chernykh, L.V.
 Zh. Neorg. Khim. 1971, 16, 2782-9.

EXPERIMENTAL VALUES cont'd:

Solubility in the NaH₂PO₄-H₃PO₄-H₂O system.

NaH ₂ PO ₄		H ₃ PO ₄		H ₂ O	solid phase
mass%	mol/kg	mass%	mol/kg	mass% ^a	
temp. = 25°C.					
49.4	8.13	----	----	50.6	NaH ₂ PO ₄ ·2H ₂ O
48.8	8.1	1.1	0.2	50.1	"
45.5	7.8	5.7	1.2	48.8	"
43.8	8.5	13.3	3.2	42.9	"
44.4	9.8	18.0	4.9	37.6	"
44.5	10.6	20.5	6.0	30.5	"
45.7	13.4	25.8	9.3	29.5	NaH ₂ PO ₄
45.5	14.6	28.6	11.2	25.9	"
44.8	16.2	32.1	14.2	23.1	"
44.6	18.2	34.9	17.4	20.5	"
43.2	18.9	37.8	20.2	19.0	"
40.1	18.6	39.0	21.1	20.9	NaH ₂ PO ₄ + NaH ₂ PO ₄ ·H ₃ PO ₄
41.5	19.3	40.6	23.2	17.9	NaH ₂ PO ₄ ·H ₃ PO ₄
35.1	15.9	46.5	25.8	18.4	"
31.7	14.3	49.8	27.4	18.5	"
23.2	10.3	57.9	31.4	18.9	"
11.7	6.3	73.0	46.5	15.3	"
temp. = 50°C.					
62.6	13.95	----	----	37.4	NaH ₂ PO ₄
60.5	13.9	3.3	0.9	36.2	"
54.3	14.5	14.6	4.8	31.1	"
52.0	14.7	18.5	6.4	29.5	"
49.3	15.5	24.2	9.3	26.5	"
45.2	19.0	35.0	18.0	19.8	"
46.9	16.0	28.7	12.0	24.4	"
43.8	20.2	38.1	21.5	18.1	"
43.7	21.7	39.6	24.0	19.7	"
41.5	23.4	43.7	29.0	14.8	NaH ₂ PO ₄ + NaH ₂ PO ₄ ·H ₃ PO ₄
40.5	22.5	44.5	29.1	15.0	NaH ₂ PO ₄ ·H ₃ PO ₄
37.2	20.4	47.4	32.0	15.4	"
30.2	17.3	55.3	38.8	14.5	"
22.6	14.8	64.7	52.0	12.7	"
16.6	11.9	71.7	62.5	11.7	"
13.6	10.4	75.4	70.4	11.0	"

^aThese values were calculated by the compiler.

COMPONENTS: (1) Disodium hydrogenphosphate; Na ₂ HPO ₄ ; [7558-79-4] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Broadbent, D.; Lewis, G.G.; Wetton, E.A.M. <i>J. Chem. Soc., Dalton Trans.</i> <u>1977</u> , 464-8.																																																																																																																														
VARIABLES: Composition at 573 and 524 K.	PREPARED BY: J. Eysseltová																																																																																																																														
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility in the Na₂HPO₄-NaOH-H₂O system.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Na₂O</th> <th style="text-align: center;">P₂O₅</th> <th style="text-align: center;">Na₂O/P₂O₅</th> <th colspan="2" style="text-align: center;">Na₂HPO₄^a</th> <th colspan="2" style="text-align: center;">NaOH^a</th> <th style="text-align: center;">Na₂O/P₂O₅</th> <th style="text-align: center;">solid phase</th> </tr> <tr> <th style="text-align: center;">mass%</th> <th style="text-align: center;">mass%</th> <th style="text-align: center;">mol ratio</th> <th style="text-align: center;">mass%</th> <th style="text-align: center;">mol/kg</th> <th style="text-align: center;">mass%</th> <th style="text-align: center;">mol/kg</th> <th style="text-align: center;">mol ratio</th> <th></th> </tr> </thead> <tbody> <tr> <td colspan="9" style="text-align: center;">temp = 573 K</td> </tr> <tr> <td 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K									1.70	0.43	9.05	0.86	0.062	1.71	0.44	2.82		1.40	0.60	5.34	1.20	0.086	1.13	0.29	2.81		1.62	1.32	2.80	2.64	0.19	0.60	0.16	2.73		2.00	1.97	2.33	3.34	0.24	0.70	0.18	2.76		2.29	2.43	2.15	4.87	0.36	0.22	0.056	2.75		3.36	3.59	2.14	7.19	0.55	0.29	0.078	2.76		3.36	3.59	2.14	7.19	0.55	0.29	0.078	2.66		temp = 524 K									6.51	2.15	6.94	4.31	0.34	5.98	1.67	2.75		4.55	3.15	3.31	6.31	0.48	2.32	0.64	2.68		10.5	9.99	2.41	20.01	1.81	2.29	0.74	2.64	
Na ₂ O	P ₂ O ₅	Na ₂ O/P ₂ O ₅	Na ₂ HPO ₄ ^a		NaOH ^a		Na ₂ O/P ₂ O ₅	solid phase																																																																																																																							
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METHOD/APPARATUS/PROCEDURE: The furnace was made from a cylindrical block of aluminum alloy fitted with electric heaters mounted so that it could be rocked. The autoclaves, filters, valves and tubing were made of stainless steel Type 316. Temperatures were measured with chromel-alumel thermocouples connected to a Comark "Electronic Thermometer." Sodium was determined by means of a specific-ion electrode (1). Phosphate was determined colorimetrically by the molybdate-vanadate method. A Unicam SP 1800 spectrometer was used.	SOURCE AND PURITY OF MATERIALS: The chemicals were of AnalaR quality. The water was deionized and had a sodium content less than 2×10^{-7} mol dm ⁻³ . ESTIMATED ERROR: The temperatures had an accuracy of ± 0.5 K. Most of the experimental points are accurate to $\pm 5-6\%$. In the more concentrated solutions, the errors are as high as 8-10%. REFERENCES: 1. Webber, H.M.; Wilson, A.L. <i>Analyst</i> <u>1969</u> , <i>94</i> , 209.																																																																																																																														

COMPONENTS:			ORIGINAL MEASUREMENTS:					
(1) Disodium hydrogenphosphate; Na ₂ HPO ₄ ; [7558-79-4]			Beremzhanov, B.A.; Savich, R.F.; Kunanbaeva, G.S.					
(2) Phosphoric acid; H ₃ PO ₄ ; [7664-38-2]			Príkl. Teor. Khím. 1978, 8-14.					
(3) Water; H ₂ O; [7732-18-5]								
VARIABLES:			PREPARED BY:					
Composition at 25°C.			J. Eysseltová					
EXPERIMENTAL VALUES:								
Solubility in the Na ₂ HPO ₄ -H ₃ PO ₄ -H ₂ O system at 25°C.								
Na ₂ HPO ₄		H ₃ PO ₄						
mass%	mol%	mol/kg ^a	mass%	mol%	mol/kg ^a	pH	refr. index	solid phase
0.66	0.13	0.08	44.22	12.82	8.19	----	1.438	Na ₂ HPO ₄
2.26	0.34	0.20	17.71	3.89	2.26	1.00	1.452	"
4.19	0.63	0.36	13.60	2.98	1.72	1.14	1.460	"
5.42	0.79	0.45	10.48	2.22	1.27	1.47	1.469	"
6.96	0.99	0.56	5.74	1.18	0.67	2.64	1.484	"
8.61	1.26	0.71	6.57	1.39	0.79	2.23	1.478	"
10.27	1.46	0.82	2.00	0.41	0.23	5.12	1.508	"
12.00	1.70	0.96	----	----	----	9.93	1.520	"
^a The mol/kg H ₂ O values were calculated by the compiler.								
AUXILIARY INFORMATION								
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:				
Solutions of phosphoric were saturated with Na ₂ HPO ₄ . Equilibrium was established in three days. Sodium was determined using flame photometry, phosphorus was determined gravimetrically. No further details are given.				No information is given.				
				ESTIMATED ERROR:				
				No details are given.				
				REFERENCES:				

solute stoichiometry			immiscibility boundary		critical phenomenon	
Na/PO ₄ ratio	mass%	mol/kg ^a	<i>t</i> ^b /°C	phase ^c	<i>t</i> /°C	mass% ^d
1	4.96	0.43	376.6 ± 0.2	L ₂	383.4 ± 0.4	2.5
1	9.98	0.92	375.0 ± 0.5	L ₂	383.7 ± 0.2	2.5
1	20.0	2.08	374.0 ± 0.2	L ₂	383.5 ± 0.2	2.5
1	30.1	3.59	376.5 ± 0.3	L ^x	384 ^d	2.5
1	34 ^d	4.29	384 ^d	L ₁ ¹	e	e
1	40.0	4.29	e	e ¹	e	e
1	50.0	8.33	e	e	e	e
1	60.1	12.55	e	e	e	e
1.20	4.55 ^b	0.38	350 ^b	L ₂		2
1.20	5.13	0.43	347.7 ± 0.5	L ₂	378.4 ± 0.5	2
1.20	10.0	0.89	340.3 ± 0.4	L ₂	380.9 ± 0.5	2
1.20	20.1	2.01	340.7 ± 0.3	L ₂	382.9 ± 0.5	2
1.20	30.3	3.47	345.7 ± 0.1	L ₂	383.5 ± 0.6	2
1.20	39.8 ^b	5.27	353.5 ± 0.1	L ^x	380 ± 2	2
1.20	40.6 ^b	5.45	350 ^b	L ₁ ¹		2
1.20	50.3	8.07	369.0 ± 0.5	L ₁ ¹	380 ± 2	2
1.20	55 ^d	9.75	382 ^d	L ₁ ¹	382 ^d	2
1.20	60.1	12.01	e	e ¹	e	e

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The synthetic method was used. A chromel-alumel thermocouple was used with a digital readout unit. The experimental details are described in ref. (1).

SOURCE AND PURITY OF MATERIALS:

Analytical reagent grade Na₂HPO₄ and trisodium phosphate hydrate² and ACS grade NaH₂PO₄·H₂O were used.

ESTIMATED ERROR:

The temperature at which immiscibility occurs had a precision of ± 0.1 K and an accuracy of 0.5-1.0 K. The critical temperature had a precision of ± 0.1-0.2 K and an accuracy of 1.0-1.5 K.

REFERENCES:

1. Marshall, W.L.; Hall, C.E.; Mesmer, R.E. *J. Inorg. Nucl. Chem.* **1981**, *43*, 449.
2. Wetton, E.A.M. *Power Industry Research* **1981**, *1*, 151.

(continued next page)

COMPONENTS: (1) Sodium dihydrogenphosphate; NaH ₂ PO ₄ ; [7558-80-7] (2) Sodium hydroxide; NaOH; [1310-73-2] (3) Water; H ₂ O; [7732-18-5]	ORIGINAL MEASUREMENTS: Marshall, W.L. <i>J. Chem. Eng. Data</i> 1982, 27, 175-80.
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EXPERIMENTAL VALUES cont'd:

Immiscibility and liquid-vapor critical phenomena for aqueous sodium phosphate solutions.

solute stoichiometry			immiscibility boundary		critical phenomenon	
Na/PO ₄ ratio	mass%	mol/kg ^a	t ^b /°C	phase ^c	t/°C	mass% ^d
1.50	2.05 ^b	0.16	350 ^b	L ₂		1
1.50	4.99	0.40	329.9 ± 0.1	L ₂	378.4 ± 0.1	1
1.50	9.59	0.80	319.0 ± 0.1	L ₂	378.8 ± 0.1	1
1.50	20.0	1.89	310.3 ± 0.1	L ₂	379.3 ± 0.2	1
1.50	30.3	3.29	310.1 ± 0.1	L ₂	378.8 ± 0.1	1
1.50	40.1	5.07	313.1 ± 0.1	L ₂	379.3 ± 0.1	1
1.50	50.2	7.64	319.9 ± 0.1	L _x	379.3 ± 0.1	1
1.50	60.2	11.46	343.2 ± 0.3	L ₁		1
1.50	63.1 ^b	12.96	350 ^b	L ₁		1
1.50	67 ^d	15.4	379 ^d	L ₁	379 ^d	1
2.00	0.8 ^g	0.06	365 ^g	L ₂		0.5
2.00	1.14 ^b	0.08	350 ^b	L ₂		0.5
2.00	3.0 ^h	0.2	324 ^h	L ₂		0.5
2.00	5.0	0.37	321.3 ± 0.4	L ₂	374.7 ± 0.5	0.5
2.00	10.0 ⁱ	0.78	300 ⁱ	L ₂		0.5
2.00	10.3 ^h	0.81	305.2 ± 0.1	L ₂	374.7 ± 0.5	0.5
2.00	12.4 ^h	1.00	300 ^h	L ₂		0.5
2.00	20.0	1.76	293.6 ± 0.2	L ₂	375.4 ± 0.5	0.5
2.00	30.0	3.01	290.6 ± 0.2	L ₂	375.1 ± 0.3	0.5
2.00	40.0 ⁱ	4.69	290.6 ± 0.4	L ₂	374.7 ± 0.5	0.5
2.00	57.3 ⁱ	9.44	300 ⁱ	L _x		0.5
2.00	72 ^b	18.09	350 ^b	L ₁		0.5
2.00	74 ^d	20.02	375 ^d	L ₁	375 ^d	0.5
2.16	4.85	0.35	301 ± 1	L ₂		
2.16	10.0	0.76	291 ± 1	L ₂		
2.16	20.0	1.71	282 ± 1	L ₂		
2.16	28.9	2.77	281 ± 1	L ₂		
2.16	37.5	4.10	279 ± 1	L ₂		

^aThe mol/kg H₂O values were calculated by the compiler.

^bLower boundary of observation (appearance of second liquid phase with rising temperature).

^cL₁ = dilute liquid phase; L₂ = concentrated liquid phase; L_x = liquid phase near the consolute solution composition (where composition L₁ = composition L₂).

^dValues at the upper temperature limit of immiscibility, determined graphically.

^eNo second liquid or critical phenomenon is observed at temperatures up to 410°C.

^bFrom the plots of ref. (2).

^gFrom the plots in ref. (3).

^hFrom the plots in ref. (4).

ⁱFrom the plots in ref. (5).

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- Panson, A.J.; Economy, G. Liu, C.-T.; Bulischek, T.S.; Lindsay, W.T., Jr. *J. Electrochem. Soc.* 1975, 122, 915.
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