COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Apfel, O. Dissertation, Technical University, Darmstadt, 1911.
VARIABLES:	PREPARED BY:
Temperature and composition.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of the saturated liquid phase.

$t/°C.$	PO_4^{3-} concn[b]	K^+ concn[b]	KH_2PO_4[a] mass%	mol/kg
0	0.77	0.77	10.48	0.86
25	1.47	1.48	19.87	1.82
			20.15[c]	1.85[c]
50	2.15	2.15	29.26	3.04
70	2.695	2.693	36.68	4.26
			36.65[c]	4.25[c]
83	3.04	3.08	41.38	5.19
			41.92[c]	5.30[c]

[a] These values were calculated by the compiler.

[b] The concentration unit is: mol/1000 g of solution.

[c] In these calculations the potassium content was taken as the starting point of the calculation. In the other calculations it was the PO_4^{3-} content.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
All the experiments were carried out in a water thermostat. Equilibrium was checked by repeated analysis. The solid and liquid phases were separated from each other by filtration through a platinum wire mat. The phosphate ion content was determined gravimetrically as $Mg_2P_2O_7$, and potassium was determined as $KClO_4$.	No information is given.
	ESTIMATED ERROR:
	No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Menzel, H.; Gabler, C. Z. Anorg. Chem. <u>1929</u>, 177, 187-214.
VARIABLES: Temperature and composition.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of KH_2PO_4 in water.

$t/°C.$	in 1000 cm^3 of solution		in 1000 g of solution		in 1000 g of water	
	mols	grams	mols	grams	mols	grams
0	1.001	136.3	0.917	124.8	1.047	142.6
15	1.359	185.0	1.233	167.8	1.481	201.7
18	1.433	195.2	1.302	177.3	1.583	215.5
25	1.699	231.3	1.474	200.7	1.845	251.2
-2.75^a					1.08	147

a This is the cryohydric point of the system under consideration. However, the authors are in doubt about the accuracy of their analytical results.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The apparatus was that described previously (1). The equilibrium was checked by repeated analysis. The $H_2PO_4^-$ ion content was determined gravimetrically as ammonium phosphomolybdate.	Kahlbaum KH_2PO_4 was used. This material had been prepared for enzyme investigations.
	ESTIMATED ERROR: The temperature was controlled to ± 0.1 K. The accuracy of the cryohydric temperature was ± 0.01 K. No other information is given.
	REFERENCES: 1. Menzel, H. Z. Anorg. Allg. Chem. <u>1927</u>, 164, 6.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Krasil'shtschikov, A.I. *Izv. In-ta Fiz-khim. An.* <u>1933</u>, *6*, 159-68.

VARIABLES:	PREPARED BY:
Composition at 0, 25 and 50°C.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of KH_2PO_4 in water.

t/°C	d g cm^{-3}	K_2O conc^a	conc^b	conc^c	P_2O_5 conc^a	conc^b	conc^c	H_2O conc^c	KH_2PO_4 mass%	d mol/kg
0	1.094	9.44	4.39	39.85	9.44	6.62	60.15	808.2	12.68	1.06
25	1.147	15.9	6.89	39.85	15.9	10.40	60.15	478.5	19.90	1.82
50		25.8	10.09	39.85	25.8	15.22	60.15	295.1	29.15	3.02

^{a}The concentration unit is: mol/1000 mol H_2O.

^{b}The concentration unit is: g/100 g of solution.

^{c}The concentration unit is: g/100 g of oxides.

^{d}These values were calculated by the compiler.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The mixtures were allowed to equilibrate for 12-15 hours in a water thermostat. Phosphorus was determined gravimetrically as $Mg_2P_2O_7$.	Kahlbaum KH_2PO_4 was used.
	ESTIMATED ERROR: The temperature was controlled to within ± 0.1 K.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Bergman, A.G.; Bochkarev, N.F. *Izv. Akad. Nauk SSSR* 1938, 237-65.
VARIABLES: Temperature and composition.	PREPARED BY: J. Eysseltová

EXPERIMENTAL VALUES:

Composition and crystallization temperatures in the aqueous KH_2PO_4 system.

KH_2PO_4			solid
mass%	mol/kg[a]	$t/°C.$	phase
4	0.30	-0.7	ice
8	0.63	-1.5	"
10	0.81	-2.1	"
12	1.00	0.8	KH_2PO_4
16	1.39	13.6	"
18	1.61	19.8	"
20	1.83	26.0	"
22	2.07	31.8	"

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

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
No details are given except that a visual polythermic method was used.	Chemically pure KH_2PO_4 was recrystallized twice before being used.
	ESTIMATED ERROR: No information is given.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0]	Kazantsev, A.A.
(2) Water; H_2O; [7732-18-5]	*Zh. Obshch. Khim.* <u>1938</u>, *13*, 1230-1.

VARIABLES:	PREPARED BY:
Temperature and composition.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions of KH_2PO_4 in water.

	mass% KH_2PO_4		
$t/°C.$	calcd.[a]	exptl	mol/kg KH_2PO_4[b]
0	12.79	12.88	1.086
5	14.05	14.00	1.196
10	15.46	15.50	1.347
15	16.93	16.87	1.491
20	18.46	18.45	1.662
25	20.09	20.04	1.841
30	21.77	21.90	2.060
35	23.51	23.65	2.275
40	25.31	25.10	2.462
45	27.17	26.90	2.703
50	29.07	29.00	3.001
60	33.01	33.40	3.684
70	37.10	37.05	4.324
80	41.29	41.30	5.169
90	45.53	45.5	6.134

[a] These values were calculated from the empirical formula:

$$a = 12.79 + 0.250\ t + 0.00182\ t^2 - 0.00000616\ t^3$$

where a is given as g KH_2PO_4/100 g soln, and t = temperature.

[b] These values were calculated by the compiler from the experimental results reported by the author.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A small amount of solid salt was added to 10-15 ml of a solution saturated at a higher temperature. The mixtures were equilibrated in a thermostat. Equilibration times were 3 hours for temperatures above 30°C, and 6 hours for temperatures lower than 30°C. After equilibration, samples of the solution were analyzed for KH_2PO_4 by drying at 110°C and weighing.

SOURCE AND PURITY OF MATERIALS:

KH_2PO_4 was synthesized from K_2CO_3 and H_3PO_4 and recrystallized. Its purity was said to be equivalent to "chemically pure".

ESTIMATED ERROR:

The temperature had a precision of ± 0.05°C. No other details are given.

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Bel'tschev. F.V. *Trudy Beloruss. S.-Kh. Akad.* <u>1953</u>, *19,* 145-9.
VARIABLES:	PREPARED BY:
Temperature and composition.	J. Eysseltová

EXPERIMENTAL VALUES:

Composition and mean crystallization temperature in the aqueous KH_2PO_4 system.

KH_2PO_4		$t/°C.$	solid phase
mass%	mol/kg[a]		
4	0.30	−0.8	ice
8	0.63	−1.6	"
10	0.81	−2.0	"
12	1.00	−0.2	"
14	1.19	−7.8	"
16	1.39	+14.1	KH_2PO_4
18	1.61	+20.6	"
20	1.83	+26.7	"
22	2.07	+32.2	"

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

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
A visual polythermic method (1) was used. No other details are given.	Chemically pure KH_2PO_4 was recrystallized twice before use.
	ESTIMATED ERROR: No information is given.
	REFERENCES: 1. Bel'tschev, F.V.; Bergman, A.G. *Zh. Prikl. Khim.* <u>1944</u>, *17,* 9.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Water; H_2O; [7732-18-5]	Punin, Yu.O.; Mirenkova, T.F.; Artamanova, O.I.; Ul'yanova, T.P. *Zh. Neorg. Khim.* 1975, 20, 2813-5.
VARIABLES: Temperature and composition.	PREPARED BY: J. Eysseltová

EXPERIMENTAL VALUES:

Parameters a_i of the equation

$$c_t = a_o + a_1 t + a_2 t^2 + --- + a_5 t^5$$

$a_o = 14.958$

$a_1 = 2.881 \times 10^{-1}$

$a_2 = 4.914 \times 10^{-3}$

$a_3 = 1.826 \times 10^{-5}$

$a_4 = 2.311 \times 10^{-7}$

$a_5 = 0$

c_t = concentration of the saturated solution as g/100 g H_2O at the temperature, t°C.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Mixtures of KH_2PO_4 and water were prepared by precise weighing. The saturation temperatures were measured by an apparatus constructed for the purpose of measuring the rate of crystal growth (1).

SOURCE AND PURITY OF MATERIALS:

A special purity grade of KH_2PO_4 was used.

ESTIMATED ERROR:

No information is given.

REFERENCES:

1. Petrov, T.G.; Trejbus, E.B.; Kosatkin, A.P. *"Vyrashtchivanie kristallov iz rastvorov"*, Nedra, Leningrad, 1967.