COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Formamide; CH_3NO; [75-12-7] (3) Water; H_2O; [7732-18-5]	Becker, B. *J. Chem. Eng. Data* 1969, *14*, 431-2.
VARIABLES: Composition at 25°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility in the KH_2PO_4-$HCONH_2$-H_2O system at 25°C.

Initial composition (mass%)			saturated solution (mass%)		
KH_2PO_4	$HCONH_2$	H_2O	KH_2PO_4	$HCONH_2$	H_2O
40.7	7.6	51.7	15.2	10.9	73.9
29.8	20.3	49.9	10.3	25.6	64.1
32.9	33.6	33.5	5.8	46.5	44.7
28.6	43.0	28.4	3.9	58.4	37.7
32.2	49.5	18.3	2.7	71.0	26.3
29.6	59.7	10.7	1.6	82.7	15.7
			1.6	85.1	13.3
20.0	74.0	6.0	0.9	91.4	7.5
			1.0	95.1	3.9
40	60	0	1.0	99.0	0

The only solid phase in equilibrium with the above saturated solutions was KH_2PO_4.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Excess salt was added to aqueous formamide, the mixture was shaken vigorously for at least 24 hours and then filtered through a fritted glass filter. The nitrogen content was determined by the Kjeldahl method, potassium was determined by the Perrin method and phosphorus was determined gravimetrically by the quinoline molybdate method.

SOURCE AND PURITY OF MATERIALS:

Fresh reagent grade salts were used without further purification. Matheson, Coleman, Bell 99% formamide was used without further purification. It had a m.p. of 2.5 ± 0.1°C in good agreement with the literature value (1).

ESTIMATED ERROR:

No information is given.

REFERENCES:

1. Smith, G.F. *J. Chem. Soc.* 1931, 3527.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Ethanamine,N,N,diethylphosphate 1:1 (triethylamine phosphate); $C_6H_{18}NO_4P$; [10138-93-9] (3) Water; H_2O; [7732-18-5]	Filipescu, L. *Rev Chim. (Bucharest)* 1971, 22, 533-40.
VARIABLES: Temperature and composition.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Solubility isotherms in the KH_2PO_4-$((C_2H_5)_3N)H_3PO_4$-H_2O system.

t/°C.	$g^d cm^{-3}$	K^+ concn^b	$(C_2H_5)_3N$ concn^b	H_2O M^c	KH_2PO_4[a] mass%	KH_2PO_4[a] mol/kg	$(C_2H_5)_3NH_3PO_4$[a] mass%	$(C_2H_5)_3NH_3PO_4$[a] mol/kg	solid^d phase
20	-----	0.1124	0.0417	1201.1	4.49	1.12	7.32	0.41	A
20	-----	0.0765	0.0896	1113.9	2.86	0.76	14.71	0.89	"
20	-----	0.0602	0.1839	758.0	1.95	0.60	26.28	1.83	"
20	1.118	0.0664	0.3391	456.6	1.76	0.66	39.60	3.39	"
20	1.144	0.0798	0.5540	292.1	1.69	0.79	51.57	5.54	"
20	1.205	0.3719	3.4538	48.4	2.00	3.71	85.48	34.53	A + B
40	-----	0.1623	0.0746	781.1	6.02	1.62	12.15	0.74	A
40	-----	0.1045	0.2427	533.3	3.09	1.04	31.58	2.42	"
40	-----	0.1026	0.3534	406.9	2.65	1.02	40.21	3.53	"
40	1.1311	0.1096	0.4039	360.6	2.68	1.09	43.39	4.03	"
40	1.229	0.6778	4.6127	35.0	2.92	6.77	87.54	46.12	A + B
60	1.181	0.2559	0.0762	557.5	9.15	2.55	11.97	0.76	A
60	-----	0.2415	0.0894	559.5	8.50	2.41	13.83	0.89	"
60	1.138	0.1800	0.2251	457.0	5.33	1.80	29.30	2.25	"
60	-----	0.2434	1.1271	135.1	3.29	2.43	66.90	11.27	"
60	-----	0.9418	5.6949	27.9	3.34	9.41	88.82	56.94	A + B
80	1.221	0.3778	0.0963	390.5	12.57	3.77	14.07	0.96	A
80	1.197	0.3361	0.1694	366.3	10.23	3.36	22.64	1.69	"
80	-----	0.2459	0.5914	221.2	4.87	2.45	51.45	5.91	"

[a] These values were calculated by the compiler.
[b] The concentration unit is: equiv/100 g water.
[c] The concentration unit is: mol/100 equiv of solute.
[d] The solid phases are: A = KH_2PO_4; B = $((C_2H_5)_3)NH_3PO_4$.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
The samples were equilibrated isothermally by stirring for 5 hours with a stream of inert gas. The potassium content was determined with a flame photometer, the $(C_2H_5)_3 NH^+$ content was determined by the Kjeldahl method.	The KH_2PO_4 was recrystallized 3 times before use. The triethylamine phosphate was synthesized from phosphoric acid and triethylamine.
	ESTIMATED ERROR: The temperature was controlled to within ± 0.05°C at 20 and 40°C and to within ± 0.1°C at 60 and 80°C.
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Ammonium dihydrogenphosphate; $NH_4H_2PO_4$; [7722-76-1] (3) Urea; CH_4N_2O; [57-13-6] (4) Water; H_2O; [7732-18-5]	Bergman, A.G.; Gladkovskaya, A.A.; Galushkina, R.A. *Zh. Neorg. Khim.* 1973, *18*, 1978-80.
VARIABLES: Temperature and composition.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Four sections through the system were investigated. The sections are:

No. 1 (45.81% $NH_4H_2PO_4$ + 54.19% KH_2PO_4) - urea - water
No. 2 (71.72% $NH_4H_2PO_4$ + 28.28% KH_2PO_4) - urea - water
No. 3 (65.70% $NH_4H_2PO_4$ + 34.30% urea) - KH_2PO_4 - H_2O
No. 4 (85.18% $NH_4H_2PO_4$ + 14.82% urea) - KH_2PO_4 - H_2O

Solubility data for saturated solutions in the urea-$NH_4H_2PO_4$-KH_2PO_4-H_2O system.

sect no	urea mass%	urea mol/kg[a]	$NH_4H_2PO_4$ mass%	$NH_4H_2PO_4$ mol/kg[a]	KH_2PO_4 mass%	KH_2PO_4 mol/kg[a]	H_2O mass%	t/°C	solid phases[b]
	1.80	0.38	9.34	1.04	11.06	1.04	77.80	+6.4	A + B + C
	1.50	0.30	8.06	0.86	9.54	0.86	80.90	-4.1	A + B + D
1	12.60	2.84	6.23	0.73	7.37	0.73	73.8	-8.0	B + C + D
	40.00	13.48	4.86	0.85	5.74	0.85	49.4	+8.0	C + F + G
	32.80	3.41	4.20	0.62	5.00	0.63	58.00	-6.0	C + E + F
	28.40	8.50	8.98	1.40	10.62	1.40	55.60	-18.0	C + D + E
	1.20	0.28	21.30	2.67	8.40	0.89	69.10	+ 19.4	A + B + C
	1.40	0.29	14.34	1.58	5.66	0.52	78.60	-5.5	A + B + D
2	24.50	6.76	10.90	1.57	4.30	0.52	60.30	-8.8	B + C + E
	32.00	9.68	9.32	1.47	3.68	0.49	55.00	-7.0	C + E + F
	41.00	12.88	8.65	1.41	3.35	0.46	53.00	+9.6	C + F + G
	24.60	6.72	10.40	1.48	4.10	0.49	60.90	-16.00	B + D + E
3	11.73	3.17	22.47	3.17	4.20	0.50	61.60	+26.5	A + B + C
	6.52	1.45	12.48	1.45	6.50	0.64	74.50	-8.0	A + B + D

(continued next page)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A visual polythermic method was used (1). Solid carbon dioxide was used as the cooling agent.

SOURCE AND PURITY OF MATERIALS:

Chemically pure salts and bidistilled water were used.

ESTIMATED ERROR:

No information is given.

REFERENCES:

1. Bergman, A.G.; Luzhnaya, N.P. *Fiziko-Khimicheskie Osnovy Izucheniya i Ispol'zovaniya Solyanykh Mestorozhdeniy Khlorid-sul'fatnogo Tipa*, Moscow, IAN SSSR, 1951.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0]	Bergman, A.G.; Gladkovskaya, A.A.; Galushkina, R.A.
(2) Ammonium dihydrogenphosphate; $NH_4H_2PO_4$; [7722-76-1]	*Zh. Neorg. Khim.* 1973, *18*, 1978-80.
(3) Urea; CH_4N_2O; [57-13-6]	
(4) Water; H_2O; [7732-18-5]	

EXPERIMENTAL VALUES cont'd:

Four sections through the system were investigated. The sections are:

No. 1 (45.81% $NH_4H_2PO_4$ + 54.19% KH_2PO_4) - urea - water
No. 2 (71.72% $NH_4H_2PO_4$ + 28.28% KH_2PO_4) - urea - water
No. 3 (65.70% $NH_4H_2PO_4$ + 34.30% urea) - KH_2PO_4 - H_2O
No. 4 (85.18% $NH_4H_2PO_4$ + 14.82% urea) - KH_2PO_4 - H_2O

Solubility data for saturated solutions in the urea-$NH_4H_2PO_4$-KH_2PO_4-H_2O system.

sect	urea		$NH_4H_2PO_4$		KH_2PO_4		H_2O		solid
no	mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	mol/kg[a]	mass%	t/°C	phases[b]
4	4.30	10.52	24.70	3.15	3.00	0.32	68.00	+17.0	A + B + C
	2.70	5.22	15.70	1.74	3.50	0.32	78.10	-5.2	A + B + D

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

[b] The solid phases are: A = α-$NH_4H_2PO_4$; B = (α-NH_4,K)H_2PO_4; C = (β-NH_4,K)H_2PO_4; D = ice; E = α-urea; F = β-urea; G = γ-urea.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Formamide; CH_3NO; [75-12-7] (3) Water; H_2O; [7732-18-5]	Beglov, B.M.; Tukhtaev, S.; Yugai, M.R. *Zh. Neorg. Khim.* 1980, 25, 2283-5.
VARIABLES:	**PREPARED BY:**
Temperature and composition.	J. Eysseltová

EXPERIMENTAL VALUES:

Solutions coexisting with two or three solid phases.

composition (mass%)				
$HCONH_2$	KH_2PO_4	H_2O	t/°C.	solid phases
0	11.5	88.5	-2.5	ice + KH_2PO_4
11.0	8.9	80.1	-7.6	"
18.4	8.0	73.6	-11.5	"
37.7	5.7	56.6	-25.0	"
57.8	3.6	38.6	-43.5	"
65.4	0	34.6	-45.5	ice + formamide
64.2	3.1	32.7	-51.2	ice + formamide + KH_2PO_4
68.1	2.7	29.2	-44.5	KH_2PO_4 + formamide
88.9	1.0	10.1	-15.0	"
94.4	1.1	4.5	-8.5	"
95.7	1.1	3.2	-6.3	"
98.8	1.2	0	-2.0	"

Solubility isotherms in the temperature range of -40 to 50°C are given only in graphical form.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

A visual polythermic method was used (1) but no details are given.

SOURCE AND PURITY OF MATERIALS:

Chemically pure KH_2PO_4 was recrystallized before use. Pure formamide was dehydrated and distilled under vacuum at 80-82°C.

ESTIMATED ERROR:

No details are given.

REFERENCES:

1. Bergman, A.G.; Luzhnaya, N.P. *Fiziko-Khimicheskie Osnovy Izucheniya i Ispol'zovaniya Solyanykh Mestorzhdeniy Khlorid-Sul'fatnogo Tipa*, Moscow, IAN SSSR, 1951.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Potassium dihydrogenphosphate; KH_2PO_4; [7778-77-0] (2) Formamide; CH_3NO; [75-12-7] (3) Water; H_2O; [7732-18-5]	Yugai, M.R.; Tukhtaev, S.; Beglov, B.M. *Uzb. Khim. Zh.* 1981, *6*, 15-8.
VARIABLES: Composition at 50°C.	**PREPARED BY:** J. Eysseltová

EXPERIMENTAL VALUES:

Composition of saturated solutions in the KH_2PO_4-$HCONH_2$-H_2O system at 50°C.

$HCONH_2$	KH_2PO_4	H_2O
mass%	mass%	mass%
0	29.42	70.58
3.68	25.82	70.50
12.80	18.67	68.53
23.59	13.83	81.33
37.44	10.31	52.25
51.07	7.46	41.47
61.35	5.26	33.39
77.42	3.58	19.00
91.29	2.73	5.98
98.16	1.84	0

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Equilibrium was approached isothermally by stirring for 1-2 days. Nitrogen content was determined by the Kjeldahl method, phosphorus was determined gravimetrically, and potassium was determined as the tetraphenylborate. The composition of the solid phase was determined by the Schreinemakers' method.

SOURCE AND PURITY OF MATERIALS:

Chemically pure or analytically pure KH_2PO_4 was used. The formamide was dried and distilled under vacuum at 80-82°C.

ESTIMATED ERROR:

The temperature was controlled to within 0.1 K.

REFERENCES: