

COMPONENTS: (1) Dipotassium hydrogenphosphate; K_2HPO_4 ; [7758-11-4] (2) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Marshall, W.L.; Hall, C.E.; Mesmer, R.E. <i>J. Inorg. Nucl. Chem.</i> <u>1981</u> , <i>43</i> , 449-55.																								
VARIABLES: Temperature and composition.	PREPARED BY: J. Eysseľtová																								
EXPERIMENTAL VALUES: Part 1. Smoothed values for the solubility of K_2HPO_4 in H_2O . <table data-bbox="614 551 971 797" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>$t/^\circ C$</th> <th>mass%</th> <th>mol/kg^a</th> </tr> </thead> <tbody> <tr><td>100</td><td>74.0</td><td>16.34</td></tr> <tr><td>150</td><td>75.5</td><td>17.69</td></tr> <tr><td>200</td><td>76.5</td><td>18.69</td></tr> <tr><td>250</td><td>77.0</td><td>19.22</td></tr> <tr><td>300</td><td>77.5^b</td><td>19.77</td></tr> <tr><td>350</td><td>78.0^b</td><td>20.35</td></tr> <tr><td>400</td><td>78.5^b</td><td>20.96</td></tr> </tbody> </table> <p data-bbox="471 807 1142 848">^aThe mol/kg H_2O values were calculated by the compiler.</p> <p data-bbox="471 848 1199 919">^bBased on experiments at temperature and extrapolation from lower temperatures. The accuracy is $\pm 1.5\%$.</p> <p data-bbox="1028 1134 1285 1175" style="text-align: right;">(continued next page)</p>		$t/^\circ C$	mass%	mol/kg ^a	100	74.0	16.34	150	75.5	17.69	200	76.5	18.69	250	77.0	19.22	300	77.5 ^b	19.77	350	78.0 ^b	20.35	400	78.5 ^b	20.96
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AUXILIARY INFORMATION																									
METHOD/APPARATUS/PROCEDURE: Gold-plated stainless steel high pressure vessels were used. The samples and a small amount of water (to counterbalance the vapor pressure) were rocked at constant high temperature between 100° and 400°C for period of time of 2 to 5 hr. The vanado-molybdate method for quantitative spectrophotometric determination was used. The reagent used was that of Bridger, et al. (1). The procedure was modified slightly.	SOURCE AND PURITY OF MATERIALS: No information is given. ESTIMATED ERROR: The accuracy of the temperature was ± 0.5 to 1 K. The accuracy of the smoothed values was $\pm 0.5\%$. REFERENCES: 1. Bridger, G.L.; Boylan, D.R.; Markey, J.W. <i>Anal. Chem.</i> <u>1953</u> , <i>25</i> , 336.																								

COMPONENTS:

- (1) Dipotassium hydrogenphosphate; K₂HPO₄; [7758-11-4]
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ORIGINAL MEASUREMENTS:

Marshall, W.L.; Hall, C.E.; Mesmer, R.E.
J. Inorg. Nucl. Chem. 1981, 43, 449-55.

EXPERIMENTAL VALUES cont'd:

Part 2. Two liquid phase regions and critical phenomena in the K₂HPO₄-H₂O system at 360-400°C.

K ₂ HPO ₄		$t^b/^\circ\text{C}$	the phase ^e appearing	$t^c/^\circ\text{C}$	upper temperature reached/ ^d °C
mass%	mol/kg ^a				
4.58	0.28	368.0	L ₂	378.5 ^g	390
10.0	0.64	360.0	L ₂	379.0 ^g	390
20.0	1.43	361.8	L ₂	-----	---
30.0	2.46	360.0	L ₂	377.4 ^g	390
40.0	3.83	361.0	L ₂	377.0 ^g	400
50.0	5.74	366.0	L ₁	g	400
60.0	8.61	>400	- ₁	-	400

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

^bThe temperature of two-liquid phase appearance with rising temperature.

^cThe liquid-vapor critical temperature of very dilute phase.

^dThe concentrated liquid phase was always clear at the highest temperature reached.

^eL₁ is the more dilute phase; L₂ is the more concentrated phase.

^gThe actual composition of the dilute phase undergoing the critical phenomenon is estimated to be 3 mass%.

^gCould not detect this.