

| COMPONENTS: (1) Tripotassium phosphate; K_3PO_4 ; [7778-53-2] (2) Water; H_2O ; [7732-18-5] | ORIGINAL MEASUREMENTS: Jänecke, E. Z. Phys. Chem. <u>1927</u> , 127, 71-92. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------|-------------|------------|-------------|--------|-------------------|----------|--------|--------|--------|--------|--------|------|------|------|----|------|------|------|------|-----|------|------|------|-----|-----|------|------|------|
| VARIABLES: Temperature and composition. | PREPARED BY: J. Eysseltová | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EXPERIMENTAL VALUES: Crystallization temperatures and composition of saturated solutions existing in equilibrium with crystalline $K_3PO_4 \cdot 8H_2O$. <table border="1" data-bbox="485 551 1056 776"> <thead> <tr> <th rowspan="2">$t/^\circ C.$</th> <th colspan="2">H_2O</th> <th colspan="2">$K_3PO_4^a$</th> </tr> <tr> <th>conc^b</th> <th>mass%</th> <th>mass%</th> <th>mol/kg</th> </tr> </thead> <tbody> <tr> <td>45.1</td> <td>68</td> <td>40.3</td> <td>59.7</td> <td>6.98</td> </tr> <tr> <td>43.2</td> <td>75</td> <td>43.0</td> <td>57.0</td> <td>6.24</td> </tr> <tr> <td>23.3</td> <td>104</td> <td>51.0</td> <td>49.0</td> <td>4.52</td> </tr> <tr> <td>7.5</td> <td>125</td> <td>55.8</td> <td>44.2</td> <td>3.73</td> </tr> </tbody> </table> <p data-bbox="342 776 913 817">^aThese values were calculated by the compiler.</p> <p data-bbox="342 817 871 878">^bThe concentration unit is: g/100 g K_3PO_4.</p> | | $t/^\circ C.$ | H_2O | | $K_3PO_4^a$ | | conc ^b | mass% | mass% | mol/kg | 45.1 | 68 | 40.3 | 59.7 | 6.98 | 43.2 | 75 | 43.0 | 57.0 | 6.24 | 23.3 | 104 | 51.0 | 49.0 | 4.52 | 7.5 | 125 | 55.8 | 44.2 | 3.73 |
| $t/^\circ C.$ | H_2O | | $K_3PO_4^a$ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | conc ^b | mass% | mass% | mol/kg | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45.1 | 68 | 40.3 | 59.7 | 6.98 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43.2 | 75 | 43.0 | 57.0 | 6.24 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23.3 | 104 | 51.0 | 49.0 | 4.52 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.5 | 125 | 55.8 | 44.2 | 3.73 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AUXILIARY INFORMATION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| METHOD/APPARATUS/PROCEDURE: The salt was added to the water and the mixture was heated until total liquefaction occurred. A cooling curve of the mixture was then measured. The methods of analysis are not described. | SOURCE AND PURITY OF MATERIALS: Merck pure K_3PO_4 was used and was further purified by dissolving the salt in water and passing NH_3 through the solution for 2-3 hours. The octahydrate precipitated from the solution. <table border="1" data-bbox="799 1430 1270 1573"> <thead> <tr> <th>Analysis:</th> <th>found</th> <th>calculated</th> </tr> </thead> <tbody> <tr> <td>H_2O</td> <td>40.00%</td> <td>40.58%</td> </tr> <tr> <td>P_2O_5</td> <td>19.10%</td> <td>19.95%</td> </tr> <tr> <td>K_2O</td> <td>40.14%</td> <td>39.47%</td> </tr> </tbody> </table> ESTIMATED ERROR: No information is given. | Analysis: | found | calculated | H_2O | 40.00% | 40.58% | P_2O_5 | 19.10% | 19.95% | K_2O | 40.14% | 39.47% | | | | | | | | | | | | | | | | | |
| Analysis: | found | calculated | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H_2O | 40.00% | 40.58% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P_2O_5 | 19.10% | 19.95% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K_2O | 40.14% | 39.47% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REFERENCES: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|--|-----------|-------|---------------------|----------------------|--|-----------|-------|---------------------|----------------|
| COMPONENTS: | | | | | ORIGINAL MEASUREMENTS: | | | | |
| (1) Tripotassium phosphate; K_3PO_4 ; [7778-53-2] | | | | | Ravich, M.I. | | | | |
| (2) Water; H_2O ; [7732-18-5] | | | | | Izv. AN SSSR. ser. Khim. <u>1938</u> , 141-6. | | | | |
| VARIABLES: | | | | | PREPARED BY: | | | | |
| Temperature and composition. | | | | | J. Eysseltová | | | | |
| EXPERIMENTAL VALUES: | | | | | | | | | |
| Compositions and crystallization temperatures in the $K_3PO_4-H_2O$ system. | | | | | | | | | |
| $t/^\circ C$. | K_3PO_4 | | solid _b | | $t/^\circ C$. | K_3PO_4 | | solid _b | |
| | mass% | mol% | mol/kg ^a | phase | | mass% | mol% | mol/kg ^a | phase |
| -1.18 | 4.54 | 0.40 | 0.22 | ice | 42.6 | 59.46 | 11.06 | 6.90 | B |
| -2.60 | 9.75 | 0.91 | 0.50 | " | 44.5 | 60.84 | 11.64 | 7.31 | " |
| -4.6 | 15.43 | 1.52 | 0.85 | " | 45.4 | 61.94 | 12.13 | 7.66 | " |
| -7.7 | 21.74 | 2.30 | 1.30 | " | 45.6 | 62.51 | 12.39 | 7.85 | " |
| -12.0 | 27.34 | 3.09 | 1.77 | " | 45.6 | 63.12 | 12.68 | 8.06 | " |
| -15.8 | 31.53 | 3.76 | 2.16 | " | 45.4 | | | | B + C |
| -20.0 | 35.12 | 4.39 | 2.54 | " | 25 | 63.17 | 12.70 | 8.07 | C ^c |
| -24.0 | 38.33 | 5.00 | 2.92 | A + ice | 30 | 63.19 | 12.71 | 8.08 | " |
| -28.2 | 40.25 | 5.40 | 3.17 | B ^c + ice | 35 | 63.33 | 12.77 | 8.13 | " |
| -8.8 | 42.92 | 6.00 | 3.54 | B | 40 | 63.41 | 12.81 | 8.16 | " |
| 0 | 44.26 | 6.31 | 3.74 | " | 45 | 63.56 | 12.89 | 8.21 | " |
| 10 | 46.83 | 6.95 | 4.14 | " | 50 | 63.80 | 13.00 | 8.30 | C |
| 20 | 49.62 | 7.71 | 4.63 | " | 60 | 64.08 | 13.14 | 8.40 | " |
| 25 | 51.42 | 8.23 | 4.98 | " | -7.7 | 43.85 | 6.21 | 3.67 | A ^c |
| 30 | 53.08 | 8.75 | 5.32 | " | 0 | 47.62 | 7.16 | 4.28 | " |
| 35 | 55.43 | 9.54 | 5.85 | " | 5.0 | 49.80 | 7.76 | 4.67 | " |
| 40 | 57.51 | 10.30 | 6.37 | " | 8.8 | 52.23 | 8.43 | 5.15 | " |
| | | | | | 12.3 | 57.72 | 10.00 | 6.43 | " |
| ^a The mol/kg H_2O values were calculated by the compiler. | | | | | | | | | |
| ^b The solid phases are: A = $K_3PO_4 \cdot 9H_2O$; B = $K_3PO_4 \cdot 7H_2O$; C = $K_3PO_4 \cdot 3H_2O$. | | | | | | | | | |
| ^c Metastable equilibrium. | | | | | | | | | |
| AUXILIARY INFORMATION | | | | | | | | | |
| METHOD/APPARATUS/PROCEDURE: | | | | | SOURCE AND PURITY OF MATERIALS: | | | | |
| The isothermal method was used. The solubility was determined by evaporating the saturated solutions and drying to constant weight. Cooling curves were determined for some of the mixtures. | | | | | The material used is reported as having been submitted by Berg. The compiler assumes the material is the same as that used in (1). | | | | |
| | | | | | ESTIMATED ERROR: | | | | |
| | | | | | No information is given. | | | | |
| | | | | | REFERENCES: | | | | |
| | | | | | 1. Berg. L.G. <i>Izv. AN SSSR. ser. Khim.</i> <u>1938</u> , 150. | | | | |