



>>Entry Name: Potassium diphosphate ( $K_4(P_2O_7)$ )

ENTRY UNDER REVIEW

**Synonym(s):** Tetrapotassium pyrophosphate, 8Cl. Tetrapotassium diphosphate, 9Cl

**CAS Registry Number:** 7320-34-5

$K_4(P_2O_7)$

**Molecular Formula:**  $K_4O_7P_2$

**Molecular Weight:** 330.336

**Accurate Mass:** 329.766757

**Percentage Composition:** K 47.34%; O 33.90%; P 18.75%

**Use/Importance:** Main use is as a constituent of liq. detergents

**Solubility:** V. sol.  $H_2O$  (187 g per  $100\text{ cm}^3$  at  $25^\circ$ )

**Other Data:** Dec. v. rapidly at  $1300^\circ$ . Forms adduct with  $H_2O_2$

**Aldrich:** 32243-1

**Fluka:** 60236

**Sigma:** P8260

>>Derivative: Monohydrate

**Source/Synthesis:** Said to be formed on drying the trihydrate at  $27^\circ$  in atmosphere of 15% rel. humidity

>>Derivative: Trihydrate

**CAS Registry Number:** 7790-67-2

**Source/Synthesis:** Synth. by addition of  $Me_2CO$  to 40% aq. soln. of the salt

**Physical Description:** Colourless cryst. (elongated rods)

**Other Data:** Monoclinic cell with anion in staggered conformn. P-O(P) 162.3, 164.9, P-O<sub>term.</sub> 150.3 pm. POP  $130.3^\circ$ . K 7 or 8 coordinate

>>Derivative: Tetrahydrate

**CAS Registry Number:** 41159-38-0

**Physical Description:** Monoclinic cryst.

>>Variant:  $\alpha$ -form

**Synonym(s):** High temp.-form

**Molecular Formula:**  $K_4O_7P_2$

**Molecular Weight:** 330.336

**Accurate Mass:** 329.766757

**Percentage Composition:** K 47.34%; O 33.90%; P 18.75%

**Source/Synthesis:** Synth. by heating  $K_2HPO_4$  at  $500^\circ$  or by dehydration of the trihydrate at  $105^\circ$

**Physical Description:** V. hygroscopic, colourless solid

**Other Data:** Stable at r.t.

>>Variant:  $\beta$ -form

**Synonym(s):** Low temp.-form

**Molecular Formula:**  $K_4O_7P_2$

**Molecular Weight:** 330.336

**Accurate Mass:** 329.766757

**Percentage Composition:** K 47.34%; O 33.90%; P 18.75%

**Source/Synthesis:** Synth. by heating  $K_2HPO_4$  at  $400^\circ$

**Physical Description:** V. hygroscopic, colourless solid

**Other Data:** Stable at r.t. Transforms into  $\alpha$ -form at  $500^\circ$

**References:**