



>>Entry Name: Hypophosphoric acid, 9CI, 8CI

Synonym(s): Diphosphoric(IV) acid. P⁴-P⁴ Acid

CAS Registry Number: 7803-60-3

(HO)₂P(O)-P(O)P(OH)₂

Molecular Formula: H₄O₆P₂

Molecular Weight: 161.975

Accurate Mass: 161.948314

Percentage Composition: H 2.49%; O 59.27%; P 38.25%

Source/Synthesis: Formed by oxidation of red P with NaClO, NaClO₂, alk. KMnO₄ or alk. H₂O₂

Physical Description: Solid. Stable at 0-5° in absence of moisture. Ag soln. when boiled → H₃PO₃ and H₃PO₄. Dec. in dil. aq. acid but stable to strongly alkaline solns.

Melting Point: Mp 73 dec.°

pKa Value: pK_{a1} 2.1; pK_{a2} 6.8; pK_{a3} 9.5 (20°, 0.1N KCl)

Hazard & Toxicity: May cause skin blisters on contact

>>Derivative: Dihydrate

Molecular Formula: H₈O₈P₂

Molecular Weight: 198.006

Accurate Mass: 197.969444

Percentage Composition: H 4.07%; O 64.64%; P 31.29%

Physical Description: Large, hygroscopic rhombic plates

Melting Point: Mp 62° (55°)

Solubility: V. sol. H₂O

Other Data: Stable for 2 months at -15°. Dec. more rapidly at r.t. Best formulated as 2H₃O⁽⁺⁾H₂P₂O₆²⁽⁻⁾

References:

Gmelin Handbook Inorg. Chem., Syst. No. 16, 1965, 143, (rev, bibl)

Brauer, G., Handb. Prep. Inorg. Chem., 2nd edn., Academic Press, 1965, 558, (synth)

Mootz, D. et al., Acta Cryst. B, 1971, **27**, 1520, (cryst struct)

Mellor Compr. Treat. Inorg. Theor. Chem., London, Longman, 1971, **8/III**, 644, (rev)

Waki, H. et al., J. Inorg. Nucl. Chem., 1977, **39**, 349