



>>Entry Name: Phosphonic acid, 9Cl, 8Cl

Synonym(s): Phosphorous acid. Dihydrogen hydridotrioxophosphate(2-). P³-acid

CAS Registry Number: 13598-36-2

Related CAS Registry Numbers(s): 15460-71-6 15477-76-6

Extra CAS Registry Numbers(s): 10294-56-1

HP(O)(OH)₂<< >>P(OH)₃

Molecular Formula: H₃O₃P

Molecular Weight: 81.996

Accurate Mass: 81.981982

Percentage Composition: H 3.69%; O 58.54%; P 37.77%

pm, P=O 145 pm, OPO 101-117°

Source/Synthesis: Synth. from P + H₂O/HI

Physical Description: White v. hygroscopic cryst. mass (EtOH aq.)

Melting Point: Mp 73.8°

Solubility: V. sol. H₂O (425 g per 100 cm³ at 20°)

pKa Value: pK_{a1} 1.43; pK_{a2} 6.67 (25°) pK_{a1} 2; pK_{a2} 6.59 (18°)

Other Data: Dec. >180° to give H₃PO₄ + PH₃

Aldrich: 21511-2

Fluka: 79540

Sigma: P7396

>>Derivative: Mono-Na salt

Synonym(s): Sodium phosphonate. Sodium phosphite

CAS Registry Number: 15475-67-9

Molecular Formula: H₂NaO₃P

Molecular Weight: 103.978

Accurate Mass: 103.963924

Percentage Composition: H 1.94%; Na 22.11%; O 46.16%; P 29.79%

Source/Synthesis: Synth. from NaOH + H₃PO₃

Use/Importance: Component of detergents

>>Derivative: Di-Na salt

References:

- Furberg, S. *et al.*, *Acta Chem. Scand.*, 1957, **11**, 1505, (*cryst struct*)
Gmelin Handbook Inorg. Chem., Syst. No. 16, 1965, 117, (*rev, bibl*)
Moedritzer, K., *Inorg. Chem.*, 1967, **6**, 936, (*P-31 nmr*)
Brun, G. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1970, **271**, 294, (*Raman*)
Takahashi, Y., *Bull. Chem. Soc. Jpn.*, 1972, **45**, 4, (*pe*)
Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **1**, 538, (*synth*)
Yeagle, P.L. *et al.*, *J.A.C.S.*, 1975, **97**, 7175, (*nmr*)
Griffiths, W.R. *et al.*, *Phosphorus Relat. Group V Elem.*, 1975, **5**, 273, (*ms*)
Fluck, E. *et al.*, *Z. Anorg. Allg. Chem.*, 1975, **412**, 47, (*pe*)
Leuchs, M. *et al.*, *Can. J. Chem.*, 1979, **57**, 487, (*ir*)
U.S. Pat., 1980, 4 207 300; *CA*, **93**, 116696, (*manuf*)
Hertzog, H. *et al.*, *Z. Chem.*, 1983, **23**, 137, (*Na salt, synth, cryst struct*)
Yasuda, S. *et al.*, *Bull. Chem. Soc. Jpn.*, 1984, **57**, 3122-3124, (*Na salt, props*)
Bickley, R.I. *et al.*, *Spectrochim. Acta A*, 1994, **50**, 1277-1285, (*Na salt, ir, Raman*)
Bretherick, L., *Handbook of Reactive Chemical Hazards*, 4th edn., Butterworths, 1990, 1236, (*haz*)
Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, PGZ899