



>>Entry Name: (Diazomethyl)phosphonic acid

Synonym(s): Diazomethanephosphonic acid



Molecular Formula: $\text{CH}_3\text{N}_2\text{O}_3\text{P}$

Molecular Weight: 122.02

Accurate Mass: 121.98813

Percentage Composition: C 9.84%; H 2.48%; N 22.96%; O 39.34%; P 25.38%

Use/Importance: Esters act as carbene sources. They form anions which convert ketones into alkynes

Hazard & Toxicity: Esters are potentially carcinogenic and explosive

>>Derivative: Mono-Me ester

Synonym(s): Methyl(diazomethyl)phosphonate

CAS Registry Number: 89815-68-9

Molecular Formula: $\text{C}_2\text{H}_5\text{N}_2\text{O}_3\text{P}$

Molecular Weight: 136.047

Accurate Mass: 136.00378

Percentage Composition: C 17.66%; H 3.70%; N 20.59%; O 35.28%; P 22.77%

Physical Description: Yellow cryst. (as *tert*-butylammonium salt)

Other Data: *tert*-Butylammonium salt dec. at 125°. CAS no. refers to the salt

>>Derivative: Di-Me ester

Synonym(s): Dimethyl (diazomethyl)phosphonate

CAS Registry Number: 27491-70-9

Molecular Formula: $\text{C}_3\text{H}_7\text{N}_2\text{O}_3\text{P}$

Molecular Weight: 150.074

Accurate Mass: 150.01943

Percentage Composition: C 24.01%; H 4.70%; N 18.67%; O 31.98%; P 20.64%

Physical Description: Yellow oil

Boiling Point: $\text{Bp}_{0.1}$ 59°

>>Derivative: Di-Et ester

Synonym(s): Diethyl (diazomethyl)phosphonate

CAS Registry Number: 25411-73-8

Molecular Formula: $\text{C}_5\text{H}_{11}\text{N}_2\text{O}_3\text{P}$

Molecular Weight: 178.127

Accurate Mass: 178.05073

Percentage Composition: C 33.71%; H 6.22%; N 15.73%; O 26.95%; P 17.39%

Source/Synthesis: Used in synth. of cyclopentynes

Physical Description: Yellow oil

Boiling Point: $\text{Bp}_{0.35}$ 69-70°

Refractive Index: n_D^{20} 1.4534

References:

- Regitz, M. *et al.*, *Annalen*, 1969, **730**, 194; 1979, 1002, (*synth, ir, props*)
Colvin, E.W. *et al.*, *J.C.S. Perkin I*, 1977, 869, (*ir, pmr, props*)
Tomioka, H. *et al.*, *J.O.C.*, 1977, **42**, 552, (*ir, pmr*)
Lahti, P.M. *et al.*, *J.A.C.S.*, 1981, **103**, 7011, (*props*)
Gilbert, J.C. *et al.*, *J.O.C.*, 1982, **47**, 1837; 1983, **48**, 448, (*props, use*)
Hauske, J.R. *et al.*, *J.O.C.*, 1982, **47**, 5019, (*use*)
Gilbert, J.C. *et al.*, *J.A.C.S.*, 1983, **105**, 664; 1984, **106**, 1885, (*use*)
Regitz, M. *et al.*, *Tetrahedron*, 1985, **41**, 819, (*synth, ir, pmr*)
Fieser and Fieser's Reagents for Organic Synthesis, Wiley, 1986, **12**, 186, (*use*)
Yau, E.K. *et al.*, *J.O.C.*, 1990, **55**, 3147, (*synth, ir, pmr, cmr, P-31 nmr*)