



>>Entry Name: Tris(hydroxymethyl)phosphine

Synonym(s): Phosphinidynetris(1-methanol), 9CI

CAS Registry Number: 2767-80-8

$\text{P}(\text{CH}_2\text{OH})_3$

Molecular Formula: $\text{C}_3\text{H}_9\text{O}_3\text{P}$

Molecular Weight: 124.076

Accurate Mass: 124.028932

Percentage Composition: C 29.04%; H 7.31%; O 38.68%; P 24.96%

Use/Importance: Forms water-soluble metal complexes with potential for aq. catalysis. Fire-proofing agent for cellulose and other polymers. Co-monomer for fire-resistant polyurethanes

Physical Description: Viscous liq. or hygroscopic needles (butanol). Rel. air-stable

Melting Point: Mp 55°

Boiling Point: Bp_{2.5} 111-114° dec.

Solubility: Sol. H_2O

Other Data: Isomerises in AcOH or HCl at 180-90°

Aldrich: 17788-1

>>Derivative: Methiodide

Synonym(s): Methyltris(hydroxymethyl)phosphonium iodide

Molecular Formula: $\text{C}_4\text{H}_{12}\text{IO}_3\text{P}$

Molecular Weight: 266.015

Accurate Mass: 265.95688

Percentage Composition: C 18.06%; H 4.55%; I 47.71%; O 18.04%; P 11.64%

Physical Description: Oil

Solubility: Insol. Et_2O , Me_2CO

>>Derivative: *P*-Me, tetraphenylborate

Synonym(s): Methyltris(hydroxymethyl)phosphonium tetraphenylborate

Molecular Formula: $\text{C}_{28}\text{H}_{32}\text{BO}_3\text{P}$

Molecular Weight: 458.344

Accurate Mass: 458.218212

Percentage Composition: C 73.37%; H 7.04%; B 2.36%; O 10.47%; P 6.76%

Physical Description: Solid ($\text{Me}_2\text{CO}/\text{C}_6\text{H}_6$)

Melting Point: Mp 170-171 dec.°

>>Derivative: Tri-Ac

Synonym(s): Tris(acetoxymethyl)phosphine. Phosphinidynetris(methyl acetate)

CAS Registry Number: 18788-02-8

Molecular Formula: $\text{C}_9\text{H}_{15}\text{O}_6\text{P}$

Molecular Weight: 250.188

Accurate Mass: 250.060627

Percentage Composition: C 43.21%; H 6.04%; O 38.37%; P 12.38%

Other Data: Forms water-sol. Rh, Pd, and Pt complexes. In AcOH at 180-90°, converted into $\text{MeP}(\text{O})(\text{CH}_2\text{OAc})_2$

>>Derivative: Oxide

Synonym(s): Phosphinylidynetris(1-methanol)

CAS Registry Number: 1067-12-5

Molecular Formula: $\text{C}_3\text{H}_9\text{O}_4\text{P}$

Molecular Weight: 140.075

Accurate Mass: 140.023847

Percentage Composition: C 25.72%; H 6.48%; O 45.69%; P 22.11%

Physical Description: Cryst. (EtOH or MeOH)

Melting Point: Mp 44-45°. Mp 50-52°, 69°, 70°

Solubility: Sol. H_2O ; insol. Et_2O , C_6H_6

Other Data: Complexes with Cd, Co, Cr, Cu, Fe, Mn, Ni, and Zn