



>>Entry Name: Aluminium phosphate ($\text{Al}(\text{H}_2\text{PO}_4)_3$)

Synonym(s): Aluminium phosphate (1:3), 9Cl, 8Cl. Aluminium tris(dihydrogen phosphate)

CAS Registry Number: 13530-50-2

$\text{Al}(\text{H}_2\text{PO}_4)_3$

Molecular Formula: $\text{AlH}_6\text{O}_{12}\text{P}_3$

Molecular Weight: 317.943

Accurate Mass: 317.888755

Percentage Composition: Al 8.49%; H 1.90%; O 60.39%; P 29.23%

Source/Synthesis: Synth. from $\text{Al}(\text{OH})_3 + \text{H}_3\text{PO}_4$; $\text{Al} + \text{H}_3\text{PO}_4$; $\text{Al}_2\text{O}_3 + \text{H}_3\text{PO}_4$ at $<300^\circ$

Use/Importance: Employed in binders eg. for glazes; metal coatings; dental cements

Physical Description: V. hygroscopic colourless hexagonal prisms

Melting Point: Mp 243°

Other Data: When heated forms condensed Al phosphates via an amorphous form produced at $230\text{-}290^\circ$. Many similar compds. $\text{Al}(\text{H}_2\text{PO}_4)_x(\text{HPO}_4)_y(\text{H}_2\text{O})_z$ descr.

Fluka: 6234

>>Derivative: Dihydrate

CAS Registry Number: 124606-61-7

Source/Synthesis: Synth. from $\text{Al}_2\text{O}_3\text{-P}_2\text{O}_5\text{-H}_2\text{O}$ system

>>Variant: (1)-form

Molecular Formula: $\text{AlH}_6\text{O}_{12}\text{P}_3$

Molecular Weight: 317.943

Accurate Mass: 317.888755

Percentage Composition: Al 8.49%; H 1.90%; O 60.39%; P 29.23%

and the columns are linked by H bonds

Physical Description: V. hygroscopic prisms

Melting Point: Mp 243°

Other Data: Undergoes phase transition at 60° with proton reorientation

>>Variant: (2)-form

Molecular Formula: $\text{AlH}_6\text{O}_{12}\text{P}_3$

Molecular Weight: 317.943

Accurate Mass: 317.888755

Percentage Composition: Al 8.49%; H 1.90%; O 60.39%; P 29.23%

Physical Description: Hygroscopic colourless cryst.