>>**Entry Name: Zinc phosphate ($Zn_3(PO_4)_2$)**
Synonym(s): Zinc phosphate (3:2), 9Cl, 8Cl. Zinc orthophosphate

CAS Registry Number: 7779-90-0
Extra CAS Registry Numbers(s): 13847-22-8
$Zn_3(PO_4)_2$

Molecular Formula: $O_8P_2Zn_3$
Molecular Weight: 386.113
Accurate Mass: 381.694279
Percentage Composition: O 33.15%; P 16.04%; Zn 50.81%

Use/Importance: Important in dental cements, metal coatings, corrosion inhibitors, pigments
Solubility: V. sl. sol. H_2O. Easily sol. dil. aq. HCl

>>**Derivative:** Monohydrate

CAS Registry Number: 27176-06-3
Source/Synthesis: Manuf. from tetrahydrate at 250°

>>**Derivative:** Dihydrate

CAS Registry Number: 14485-28-0
Source/Synthesis: Possibly formed by dehydration of the tetrahydrate at *ca.* 110-150°. Monoclinic

>>**Derivative:** Tetrahydrate

CAS Registry Number: 7543-51-3
Source/Synthesis: Synth. from $ZnSO_4$ aq. + $(NH_4)_2HPO_4$ or K_2HPO_4 aq. at r.t.; or ZnO + H_3PO_4 aq.
Physical Description: Colourless plates with weak birefringence
Other Data: Loses $2H_2O$ at 150°, $1H_2O$ at 200°. The fourth H_2O is stable at up to 250°. Also reported to lose $4H_2O$ at 105-175° → anhydrous α-salt

>>**Variant:** α-form

Molecular Formula: $O_8P_2Zn_3$
Molecular Weight: 386.113
Accurate Mass: 381.694279
Percentage Composition: O 33.15%; P 16.04%; Zn 50.81%

sharing tetrahedra, Zn-O 186-203 pm
Other Data: Stable at <962° when converts into β-form. Unstable in presence of impurity ions eg. $Mn^{2(+)}$, $Mg^{2(+)}$, $Cd^{2(+)}$. Traces of $Mn^{2(+)}$ cause green luminescence

>>**Variant:** β-form

Molecular Formula: $O_8P_2Zn_3$
Molecular Weight: 386.113
Accurate Mass: 381.694279
Percentage Composition: O 33.15%; P 16.04%; Zn 50.81%

Source/Synthesis: Obt. from α-form at >962°
Melting Point: Mp 1060°
Other Data: Exhibits red luminescence with traces $Mn^{2(+)}$. At Mp and above loses P_4O_{10}

>>**Variant:** γ-form

Molecular Formula: $O_8P_2Zn_3$
Molecular Weight: 386.113
Accurate Mass: 381.694279
Percentage Composition: O 33.15%; P 16.04%; Zn 50.81%

Source/Synthesis: Obt. from hopeite at 920°
Other Data: Stable at <900° and only in the presence of some impurity ions eg. $Mn^{2(+)}$, $Mg^{2(+)}$, $Cd^{2(+)}$. Traces of $Mn^{2(+)}$ cause red luminescence