

Oxoacids of Phosphorous-Preparation and Structure

Oxoacids of Phosphorous-Preparation:

Name	Formula	Oxidation state	Preparation
Hypophosphorous acid	H_3PO_2	+1	$\text{P}_4 + 6\text{H}_2\text{O} \longrightarrow 3\text{H}_3\text{PO}_2 + \text{PH}_3$
Orthophosphorous acid	H_3PO_3	+3	$\text{P}_4\text{O}_6 + 6\text{H}_2\text{O} \longrightarrow 4\text{H}_3\text{PO}_3$
Hypophosphoric acid	$\text{H}_4\text{P}_2\text{O}_6$	+4	$2\text{P} + 2\text{O}_2 + 2\text{H}_2\text{O} \longrightarrow \text{H}_4\text{P}_2\text{O}_6$
Orthophosphoric acid	H_3PO_4	+5	$\text{P}_4\text{O}_{10} + 6\text{H}_2\text{O} \longrightarrow 4\text{H}_3\text{PO}_4$
Pyrophosphoric acid	$\text{H}_4\text{P}_2\text{O}_7$	+5	$2\text{H}_3\text{PO}_3 \longrightarrow \text{H}_4\text{P}_2\text{O}_7 + \text{H}_2\text{O}$

Oxoacids of Phosphorous-Structure:

Name	Formula	Structure
Hypophosphorous acid	H_3PO_2	$ \begin{array}{c} H \\ \\ H - P - OH \\ \\ O \end{array} $
Orthophosphorous acid	H_3PO_3	$ \begin{array}{c} O \\ \\ HO - P - OH \\ \\ H \end{array} $
Hypophosphoric acid	$H_4P_2O_6$	$ \begin{array}{c} O \quad O \\ \quad \\ HO - P - P - OH \\ \quad \\ HO \quad OH \end{array} $
Orthophosphoric acid	H_3PO_4	$ \begin{array}{c} O \\ \\ HO - P - OH \\ \\ OH \end{array} $
Pyrophosphoric acid	$H_4P_2O_7$	$ \begin{array}{c} O \quad O \\ \quad \\ HO - P - O - P - OH \\ \quad \\ HO \quad OH \end{array} $