PHOSPHATE VS PHOSPHITE
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CHEMICAL DIFFERENCES OF PHOSPHORIC ACID (Phosphate), PHOSPHOROUS ACID (Phosphite) AND PHOSPHONIC ACID (Phosphonate)

\[
\begin{align*}
\text{O} & \quad \text{O} \\
\text{HO} & \quad \text{HO} \\
\text{P} & \quad \text{P} \\
\text{OH} & \quad \text{OH} \\
\text{H} & \quad \\
\end{align*}
\]

Contrast which is phosphoric acid to which is phosphorous acid.

When phosphoric acid (H₃PO₄) is neutralized with a base, such as potassium hydroxide (KOH) or ammonium hydroxide (NH₄OH), a salt results. The salt of phosphoric acid is a phosphate. For example:

\[
\begin{align*}
\text{H}_3\text{PO}_4 + \text{KOH} & \rightarrow \text{KH}_2\text{PO}_4 \\
\text{KH}_2\text{PO}_4 + \text{KOH} & \rightarrow \text{K}_2\text{HPO}_4 \\
\text{K}_2\text{HPO}_4 + \text{KOH} & \rightarrow \text{K}_3\text{PO}_4
\end{align*}
\]

phosphoric acid → Potassium dihydrogen phosphate (monobasic) → dipotassium hydrogen phosphate (dibasic) → potassium phosphate (tribasic)

(For convenience, all forms of the salt are routinely referred to as "potassium phosphate" with potassium dihydrogen phosphate and dipotassium hydrogen phosphate serving as phosphate fertilizers).

When phosphorous acid (H₃PO₃) is neutralized with a base, such as potassium hydroxide (KOH) or ammonium hydroxide (NH₄OH), a salt results. The salt of phosphorous acid is a phosphite. For example:

\[
\begin{align*}
\text{H}_3\text{PO}_3 + \text{KOH} & \rightarrow \text{KH}_2\text{PO}_3 \\
\text{KH}_2\text{PO}_3 + \text{KOH} & \rightarrow \text{K}_2\text{HPO}_3
\end{align*}
\]

phosphorous acid → potassium dihydrogen phosphate → dipotassium monohydrogen phosphate

An organic derivative of phosphorous acid is a phosphonate. A breakdown product of a phosphonate is phosphonic acid.