

Chemistry I
Polyatomic Ions

Here's a list of common polyatomic ions and acids:

<i>Ion</i>	<i>Name</i>	<i>Acid Formula</i>	<i>Acid Name</i>
NH_4^+	Ammonium*		
NO_3^-	Nitrate	HNO_3	Nitric Acid
NO_2^-	Nitrite	HNO_2	Nitrous Acid
OH^-	Hydroxide*	HOH	Water (not really an acid)
CN^-	Cyanide	HCN	Hydrocyanic Acid
SCN^-	Thiocyanate	HSCN	Thiocyanic Acid
ClO_4^-	Perchlorate*	HClO_4	Perchloric Acid
ClO_3^-	Chlorate*	HClO_3	Chloric Acid
ClO_2^-	Chlorite*	HClO_2	Chlorous Acid
ClO^-	Hypochlorite*	HClO	Hypochlorous Acid
$\text{C}_2\text{H}_3\text{O}_2^-$	Acetate	$\text{HC}_2\text{H}_3\text{O}_2$	Acetic Acid
MnO_4^-	Permanganate	HMnO_4	Permanganic Acid
SO_4^{2-}	Sulfate*	H_2SO_4	Sulfuric Acid
SO_3^{2-}	Sulfite*	H_2SO_3	Sulfurous Acid
HSO_4^-	Hydrogen sulfate or Bisulfate*	H_2SO_4	Sulfuric Acid
$\text{S}_2\text{O}_3^{2-}$	Thiosulfate	$\text{H}_2\text{S}_2\text{O}_3$	Thiosulfuric Acid
CO_3^{2-}	Carbonate	H_2CO_3	Carbonic Acid
HCO_3^-	Hydrogen carbonate or bicarbonate	H_2CO_3	Carbonic Acid
CrO_4^{2-}	Chromate	H_2CrO_4	Chromic Acid
$\text{Cr}_2\text{O}_7^{2-}$	Dichromate	$\text{H}_2\text{Cr}_2\text{O}_7$	
O_2^{2-}	Peroxide	H_2O_2	Hydrogen Peroxide (not really an acid)
$\text{C}_2\text{O}_4^{2-}$	Oxalate	$\text{H}_2\text{C}_2\text{O}_4$	Oxalic Acid
PO_4^{3-}	Phosphate*	H_3PO_4	Phosphoric Acid
HPO_4^{2-}	Hydrogen Phosphate*	H_3PO_4	Phosphoric Acid
H_2PO_4^-	Dihydrogen Phosphate*	H_3PO_4	Phosphoric Acid

Hints to help you remember these ions:

- For the asterisked (*) ions, you can figure out their charge from the non-oxygen element and the periodic table. Example: ClO_3^- : Cl corresponds to a 1- charge on the periodic table.
- Changing the number of Oxygens does not change the charge. Example: ClO_4^- , ClO_3^- , ClO_2^- , ClO^-
- Adding Hydrogens increases the charge by +1. Examples: PO_4^{3-} , HPO_4^{2-} , H_2PO_4^-
- Ammonium (NH_4^+) is the only + polyatomic ion you need to know.
- Phosphate (PO_4^{3-}) is the only 3- polyatomic ion you need to know.
- "Per-X-ate" → loses oxygen → "X-ate" → loses oxygen → "X-ite" → loses oxygen → "hypo-X-ite"

Hints to help you remember the acids:

- "Per-X-ate" ion corresponds to "Per-X-ic Acid"
- "X-ate" ion corresponds to "X-ic Acid"
- "X-ite" ion corresponds to "X-ous Acid"
- "Hypo-X-ite" ion corresponds to "hypo-X-ous Acid"

What about acids of mono-atomic anions? (Where anion ends in -ide) Like HCl? Or HF? "Hydro-X-ic Acid"

HCl	Hydrochloric Acid
HF	Hydrofluoric Acid
HCN	Hydrocyanic Acid