

## Naming acids and bases

### Binary acid

Binary acid is an acid that contains only two elements

#### Binary Acids

Nonmetal	Formula	Name
Fluorine	HF	Hydrofluoric acid
Chlorine	HCl	Hydrochloric acid
Bromine	HBr	Hydrobromic acid
Iodine	HI	Hydroiodic acid
Sulphur	H <sub>2</sub> S	Hydrosulfuric acid
Phosphorus	H <sub>3</sub> P	Hydrophosphoric acid

When naming binary acids they must contain the following:

- Hydro
- Name of the nonmetal
- Drop ending add -ic
- Add acid to the end

Hydro-\_\_\_\_-ic Acid

### Tertiary Acids (Oxyacids)

Tertiary acids are acids that contain more than two elements in the compound ( $\text{H}_2\text{SO}_4$ ), You need your polyatomic ion chart to help name these.

When naming Oxyacids you do the following:

-Name the polyatomic ion

-If the polyatomic ion ends in -ate, then replace -ate with -ic

- Add acid at the end

Ex:  $\text{H}_2\text{SO}_4$

Sulfate --> Sulfuric Acid

$\text{HMnO}_4$

Permanganate --> Permanganic Acid

-If the polyatomic ends in -ite, then replace -ite with -ous

-Add acid at the end

Ex:  $\text{H}_2\text{SO}_3$

Sulfite --> Sulfurous Acid

$\text{H}_3\text{PO}_3$

Phosphite --> Phosphorus Acid

## **Naming Bases**

- Name the Metal first**
- Then add hydroxide**

**Ex:**

**NaOH**

**Sodium Hydroxide**

**KOH**

**Potassium Hydroxide**

**When writing their formulas, for acids and bases,  
remember to take into account their charges**

## Calculating pH/pOH

$$\begin{aligned} \text{pH} &= -\log[\text{H}^+] \\ \text{pOH} &= -\log[\text{OH}^-] \\ 14 &= \text{pH} + \text{pOH} \\ 10^{-\text{pH}} &= [\text{H}^+] \\ 10^{-\text{pOH}} &= [\text{OH}^-] \end{aligned}$$

[ ]: concentration

**Concentration (Molarity):** the amount of solute (moles) vs solvent (L)

**Solvent:** Liquid doing the dissolving

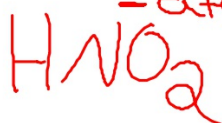
**Solute:** Substance being dissolved

**Molarity (M) = Moles of Solute / Liters of Solvent**

Write the formula or name

-ite  $\rightarrow$  -ous  
-ate  $\rightarrow$  -ic

1) nitrous acid  
Nitrite



2)  $\text{H}_3\text{AsO}_3$

Arsenite  $\rightarrow$  Arsenous Acid

3)  $\text{H}_2\text{CO}_3$

Carbonate  $\rightarrow$  Carbonic Acid

4) Calcium Hydroxide



Calculate the Concentration



5) A 0.351 M solution of HCl.

$$\text{pH} = -\log[0.351] = .45$$

6) 1.2 L of a solution containing  $5.0 \times 10^{-4}$  grams of hydrobromic acid.

$$\frac{5 \times 10^{-4}}{80.05} = 6.25 \times 10^{-6} \text{ moles}$$

$$\frac{6.25 \times 10^{-6}}{1.2 \text{ L}} = 5.21 \times 10^{-6} \text{ M}$$

$\text{pH} = -\log[5.21 \times 10^{-6}] = 5.28$