

NAME:

**CHAPTER 5**

**NAMING & WRITING FORMULAS: Binary Acids and Oxyacids**

**SNC 2D0**

**ACIDS** always produce hydrogen ( $H^+$ ).

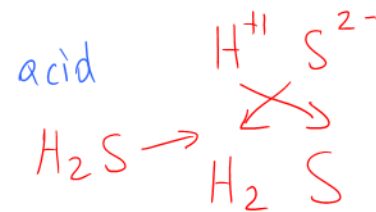
There are two types of acids: binary acids and oxyacids.

**1. BINARY ACIDS**

- Binary acids contain only 2 elements, hydrogen and one other element.

**Rules** *hydro + root + ic*

- Use **hydro** as the prefix.
- Then add the stem name of the second element.
- Add an **ic** ending



*aqueous*  
 ↓  
 (Solution)

**Examples of Common Binary Acids**

Formula	Compound Name	Acid Name	Use
HCl (aq)	Hydrogen Chloride	Hydrochloric Acid	cleaning concrete
$H_2S$ (aq)	Hydrogen sulfide	Hydrosulfuric Acid	purify metals
HF (aq)	Hydrogen Fluoride	Hydrofluoric acid	etching glass
HBr (aq)	Hydrogen bromide	Hydrobromic acid	to make cleaning compounds

**2. OXOACIDS**

- The second type of acid is an oxy acid.
  - These acids contain hydrogen, oxygen and one non-metal.
- Oxy acids are often formed with a polyatomic ion (radical) that react with hydrogen.

$H_2SO_4$   
 ↓  
 Sulfate  
 ↓  
 Sulfuric acid



**Rules**

- The radical ending, **ate**, is dropped.
- The ending **ic acid** is added to the stem name

*-ate → root + ic acid*  
*-ite → root + ous acid*

**Examples of Common Oxyacids**

Formula	Radical	Radical Name	Acid Name
$H_2C_2H_3O_2$ (aq)	$C_2H_3O_2^{1-}$	acetate	Acetic Acid
HNO <sub>3</sub> (aq)	$NO_3^{1-}$	nitrate	Nitric Acid
$H_2CO_3$ (aq)	$CO_3^{2-}$	carbonate	Carbonic acid
H <sub>2</sub> SO <sub>4</sub> (aq)	$SO_4^{2-}$	Sulfate	sulfuric Acid
$H_3PO_4$ (aq)	$PO_4^{3-}$	phosphate	phosphoric Acid

For all acids, the number of hydrogen atoms is equal to the valence or charge on the polyatomic or radical it is bonding with.

**Practice makes Perfect!!**

Formula	Binary or Oxoacid?	Name
		hydrochloric acid
HF <sub>(aq)</sub>		
		hydroiodic acid
H <sub>3</sub> P <sub>(aq)</sub>		
		sulphuric acid
		phosphoric acid
HNO <sub>3 (aq)</sub>		
H <sub>2</sub> CO <sub>3 (aq)</sub>		
		hydrosulphuric acid
HClO <sub>3 (aq)</sub>		

### WRITING NAMES – BINARY/OXYACIDS

Formula	Name	Formula	Name
1. HF <sub>(aq)</sub>		10. HClO <sub>(aq)</sub>	
2. HI <sub>(aq)</sub>		11. HClO <sub>2 (aq)</sub>	
3. HCl <sub>(aq)</sub>		12. HClO <sub>3 (aq)</sub>	
4. HBr <sub>(aq)</sub>		13. HClO <sub>4 (aq)</sub>	
5. H <sub>2</sub> S <sub>(aq)</sub>		14. H <sub>2</sub> CO <sub>3 (aq)</sub>	
6. HNO <sub>3 (aq)</sub>		15. H <sub>2</sub> C <sub>2</sub> O <sub>4 (aq)</sub>	
7. HNO <sub>2 (aq)</sub>		16. H <sub>3</sub> PO <sub>4 (aq)</sub>	
8. H <sub>2</sub> SO <sub>4 (aq)</sub>		17. H <sub>3</sub> PO <sub>3 (aq)</sub>	
9. H <sub>2</sub> SO <sub>3 (aq)</sub>		18. H <sub>2</sub> CrO <sub>4 (aq)</sub>	

### WRITING FORMULAS – BINARY/OXYACIDS

Name	Formula	Name	Formula
1. Hydrobromic acid		10. Carbonic acid	
2. Hydroiodic acid		11. Chloric acid	
3. Hydrofluoric acid		12. Chlorous acid	
4. Hydrochloric acid		13. Perchloric acid	
5. Hydrosulfic acid		14. Hypochlorous acid	
6. Phosphoric acid		15. Permanganic acid	
7. Phosphorous acid		16. Acetic acid	
8. Sulfuric acid		17. Nitric acid	
9. Sulfurous acid		18. Nitrous acid	