

## Ionic Vs Molecular Compounds

IONIC	MOLECULAR
Cation + Anion Metal ion + non-metal ion $\text{NH}_4^+$ + polyatomic ion (-ate or -ite) ie) $(\text{NH}_4)^{1+}_2\text{S}^{2-}$ = ammonium sulfide	Non metals only (no charges) ie) $\text{CO}_2$ - carbon dioxide
Colorful	White or colorless
At room temp: (s)	At room temp: (s), (g), (l)
All are soluble at vary amounts; (aq) or precipitate (s) (pg. 6 in databook)	Only sugars and alcohols are soluble (dissolved in water)
Melting point is above 300C	Melting point is below 300C
* Electrolyte = conduct electricity when (aq) NOT when (s)	*Non-electrolyte = do not conduct.

## Ionic Compound Names & Formulas

TYPES	NAMING RULES	FORMULA RULE
1) Binary - 2 symbols	Name cation Name anion (ide) <b>ie) sodium chloride</b> (no capitals)	Symbol of cation <sup>charge</sup> Symbol of anion <sup>charge</sup> Reduce & Cross the charges (not 1) ie) $\text{Ca}^{2+} \text{P}^{3-}$ $\text{Ca}_3 \text{P}_{2(s)}$
Polyatomic ionic compounds	Name cation Name anion from PT <b>ie) ammonium phosphate</b> (no capitals)	Same as above except use brackets ie) $\text{NH}_4^{1+} \text{PO}_4^{3-}$ $(\text{NH}_4)_3 \text{PO}_{4(s)}$
Multiple charged metals	Name cation (I, II, III, IV) Name anion vanadium( <b>IV</b> )oxide vanadium(V)oxide	Same rules as above; must pick the charge that balances charges. ie) $\text{V}^{4+,3+} \text{O}^{2-} \rightarrow \text{VO}_{2(s)}$
Hydrates - absorbs water	cation + anion prefix hydrate Mono = 1 Di = 2 Tri = 3 Tetra = 4 Penta = 5 Hexa = 6 Hepta = 7 Octa = 8 Nona = 9 Deca = 10 ie) copper (II) sulfate pentahydrate	Symbols ● # $\text{H}_2\text{O}_{(s)}$ ie) $\text{Cu}^{2+} \text{SO}_4^{2-} \bullet 5\text{H}_2\text{O}_{(s)}$

## TYPES OF MOLECULAR COMPOUNDS:

<p>1) Memorized molecular (so you be famaliar and do you work quickly) NOTE: They are on pg 4-5 of databook ACIDS are on pg 8-9 of databook</p>	<p>2) Binary molecular</p>
<p><math>\text{H}_2\text{O}_{(g), (l)} \rightarrow</math> water  <math>\text{H}_2\text{O}_2_{(l)} \rightarrow</math> hydrogen peroxide  <math>\text{NH}_3_{(g)} \rightarrow</math> ammonia  <math>\text{CH}_4_{(g)} \rightarrow</math> methane (natural gas)  <math>\text{CH}_3\text{OH}_{(l)} \rightarrow</math> methanol (wood alcohol)  <math>\text{C}_2\text{H}_6_{(g)} \rightarrow</math> ethane  <math>\text{C}_2\text{H}_5\text{OH}_{(l)} \rightarrow</math> ethanol (alcohol for drinking)  <math>\text{C}_3\text{H}_8_{(g)} \rightarrow</math> propane  <math>\text{C}_3\text{H}_7\text{OH}_{(l)} \rightarrow</math> propanol  <math>\text{C}_6\text{H}_{12}\text{O}_{6(s)} \rightarrow</math> glucose  <math>\text{C}_{12}\text{H}_{22}\text{O}_{11(s)} \rightarrow</math> sucrose  <math>\text{C}_6\text{H}_6_{(l)} \rightarrow</math> benzene  <math>\text{CH}_3\text{COOH}_{(aq)} \rightarrow</math> vinegar, ethanoic acid (pg 8)  <math>\text{O}_3_{(g)} \rightarrow</math> ozone</p>	<p>2 non-metals NAME: Prefix 1st name (mono) Prefix 2nd name ie) Dinitrogen pentaoxide FORMULA: <math>\text{N}_2\text{O}_{5(g)}</math></p>