

Nomenclature and Formulas

Binary Ionics

- 1.
- 2.
- 3.

The simplest forms

NaCl KI CaS Li_3N CsBr MgO

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Ions	F^-	O^{2-}	SO_4^{2-}	PO_4^{3-}
Na^+				
Ca^{2+}				
Al^{3+}				
NH_4^+				

More complex forms involve transition metals.

Table 1.4 Names of some cations with variable charge numbers

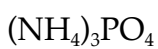
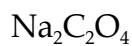
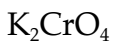
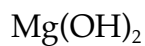
Element	Cation	Old style name	Modern name
cobalt	Co ²⁺	cobaltous	cobalt(II)
	Co ³⁺	cobaltic	cobalt(III)
copper	Cu ⁺	cuprous	copper(I)
	Cu ²⁺	cupric	copper(II)
iron	Fe ²⁺	ferrous	iron(II)
	Fe ³⁺	ferric	iron(III)
lead	Pb ²⁺	plumbous	lead(II)
	Pb ⁴⁺	plumbic	lead(IV)
manganese	Mn ²⁺	manganous	manganese(II)
	Mn ³⁺	manganic	manganese(III)
mercury	Hg ₂ ²⁺	mercurous	mercury(I)
	Hg ²⁺	mercuric	mercury(II)
tin	Sn ²⁺	stannous	tin(II)
	Sn ⁴⁺	stannic	tin(IV)

When naming compounds of this type we use what is called the Stock number system.



Some compounds contain polyatomic ions. There is no way of using these without first memorizing all the commonly used polyatomic ions.

Name the following compounds formed by the combination of ions that contain more than one atom.



Naming Molecular Compounds

We start by using Greek prefixes omitting mono by choice.

Number	Greek Prefix	Number	Greek Prefix
1		6	
2		7	
3		8	
4		9	
5		10	

<i>Formula</i>	<i>Proper Name</i>	<i>Formula</i>	<i>Proper Name</i>
1. N ₂ O		6. SO ₂	
2. NO		7. SO ₃	
3. NO ₂		8. H ₂ O	
4. N ₂ O ₄		9. CO	
5. N ₂ O ₅		10. CO ₂	

Naming Acids

For non oxy acids use this form

Hydro - _____ -ic acid

HCl

HBr

HF

HI

For oxy acids look at the original anion that came from the acid

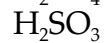
-ate becomes -ic

sulfate gives sulfuric acid



-ite becomes -ous

sulfite gives sulfurous acid



Acid

Original anion

Acid Name

HNO_2

HNO_3

Multiple Oxidation States: A special example

Ion	Name	Acid	Acid Name
Cl^-			
ClO^-			
ClO_2^-			
ClO_3^-			
ClO_4^-			

Ion	Name	Acid	Acid Name
Br^-			
BrO^-			
BrO_2^-			
BrO_3^-			
BrO_4^-			