

Coordination Compounds Nomenclature Guide

- 1) In naming a coordination compound that is a salt, name the cation first and the anion second.
- 2) When giving the name of the complex ion or molecule, name the ligands first, in alphabetical order, followed by the name of the metal.
 - a. If a ligand is an anion whose name ends in *-ite* or *-ate*, the final *e* is changed to *o*
Example: "sulfate" becomes "sulfato", "nitrate" becomes "nitrato", etc.
 - b. If a ligand is an anion whose name ends in *-ide*, the *-ide* is changed to *o*
Example: "chloride" becomes "chloro", "cyanide" becomes "cyano", etc.
 - c. If a ligand is a neutral molecule, its common name is usually used.
Exceptions: water becomes *aqua*
ammonia becomes *ammine*
carbon monoxide becomes *carbonyl*
 - d. When more than one simple monodentate ligand, use di, tri, tetra, etc. prefix.
 - e. When more than one complex ligand, use bis, tris, tetrakis, pentakis, etc. prefix.
- 3) If the complex ion is an anion, the suffix *-ate* is added to the metal name.
- 4) Following the name of the metal, the oxidation number of the metal is given in Roman numerals.

Examples of Coordination Compounds:

$[\text{Ni}(\text{H}_2\text{O})_6]\text{SO}_4$	Hexaaquanickel(II) sulfate
$\text{K}_2[\text{CoCl}_4]$	Potassium tetrachlorocobaltate(II)
$\text{Ba}[\text{BrF}_4]_2$	Barium tetrafluorobromate(III)
$\text{Li}[\text{CrF}_4\text{O}]$	Lithium tetrafluorooxochromate(V)
$[\text{Ru}(\text{NH}_3)_5\text{N}_2]\text{Cl}_2$	Pentaamminedinitrogenruthenium(II) chloride
$\text{K}[\text{Pt}(\text{NH}_3)\text{Cl}_3]$	Potassium amminetrichloroplatinate(II)
$\text{Co}(\text{phen})_2\text{Cl}_2$	Dichlorobis(phenanthroline)cobalt(II)