

NOMENCLATURE OF INORGANIC COMPOUNDS

N&C - 01

Complex salts

IUPAC RULE

1. Order of Naming ions or Complex: - In Inorganic Complexes or Ionic Complexes Cation is named first then anion. (i.e NaCl Sodium chloride)

For Example: - $[Ni(NH_3)_6]Cl_2 \rightarrow$ Hexa amine nickel II Chloride.

[Here six NH_3 is referred as Hexa amine, then O.N. of Ni i.e II then Chloride]

Non Ionic Complexes i.e Molecular Complexes, However they are given One Word Name.

e.g $[Pt(NH_3)_2Cl_4]$ is named as Tetra chloro diamino Platinum(IV)

[Most electronegative then less or neutral then Name of Metal with O.N.]

2. Naming of Ligands: - (a) In naming of a complex ion, Ligands are named first and the number of ligands is indicated by writing di, tri, tetra, etc. before the name of ligand, but the hyphen is not introduced between the name of ligand and the suffix number.

(b) If there are two or more different kinds of ligands then ligands are named in the following order: -

(i) Negative (ii) Neutral (iii) Positive, without separator by hyphen.

Within Ligands of same category the groups are listed in order of increasing complexity (i.e Halo substituents are named according to increasing electronegativity)

For example $[Pt(NH_3)_4 \cdot NO_2 Cl] SO_4$ is named as Chloro Nitro tetra ammine - Platinum(IV) Sulphate

$NH_4 [Cr(NH_3)_4(NCS)_4]$:- Ammonium tetrathiocyanato diammine Chromate III

(c) Neutral Ligands are named as the molecule, if however neutral molecule is water, then it is named as Aquo and Ammonia molecule is named as ~~ammine~~ Amine.

(d) The names of anion which are bonded with metal ion as Ligand is as follows: -

(i) Anions bonded with metal ion and its name ends with 'ide' then 'ide' is replaced by 'o'.

F^- - Fluoride \rightarrow Fluoro

Cl^- - chloride \rightarrow chloro

CN^- \rightarrow cyanide \rightarrow cyano

OH^- \rightarrow hydroxide \rightarrow Hydroxo

Br^- \rightarrow bromide \rightarrow Bromo

NH_2^- \rightarrow imide \rightarrow Imido

NH_2^- \rightarrow amide \rightarrow Amido

O_2^{2-} \rightarrow Peroxide \rightarrow Peroxo

$O_2H_2^-$ \rightarrow Perohydroxide \rightarrow Perohydroxo

(ii) In some cases, the anionic ligands which ends with 'ate' or 'ite', the 'e' is replaced by 'o'.

SO_4^{2-} \rightarrow sulphate \rightarrow Sulphato

$C_2O_4^{2-}$ \rightarrow Oxalate \rightarrow Oxalato

NO_3^- \rightarrow Nitrate \rightarrow Nitrato

NO_2^- \rightarrow Nitrite \rightarrow Nitrito

CH_3COO^- \rightarrow Acetate \rightarrow Acetato

(iii) The names of Cationic ligands are the same as those of the corresponding compound or ion. Carbonyl and Pyridine (C_5H_5N) is also named as usually.