

Double Salts and Co-ordination Compounds.

When solutions of two or more stable compounds are mixed in stoichiometric (simple molecular) proportions new crystalline compounds called molecular or addition compounds are formed. These are of two types :

(1) Double salts, (2) Co-ordination or Complex compounds

(1) **Double salts** : Addition compounds, stable in solid state. Dissociate into ions in aqueous solution as such give test for each constituent ion. Examples:

Double Salt	Responds test for the ions
Carnalite : $KCl \cdot MgCl_2 \cdot 6H_2O$	K^+ , Mg^{2+} , Cl^-
Potash alum : $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$	K^+ , Al^{3+} , SO_4^{2-}

(2) **Co-ordination or Complex compounds** : Addition compound, stable in solid state. Retain their identity even in solution. Central metal ion form dative or coordinate bond with the species surrounding it (ligands). Examples :

Complex compound	Cation	Anion
$[Cu(NH_3)_4]SO_4$	$[Cu(NH_3)_4]^{+2}$	SO_4^{2-}
$K_2[PtF_6]$	$2K^+$	$[PtF_6]^{2-}$
$[Co(NH_3)_6][Cr(CN)_6]$	$[Co(NH_3)_6]^{2+}$	$[Cr(CN)_6]^{3-}$