TOPIC : LIST OF RADICALS

VALENCY OF IONS :

The valency of an ion is same as the charge present on the ion.
If an ion has 1 unit of positive charge, its valency is +1 and it is known as a monovalent cation. If an ion has 2 units of negative charge, its valency is -2 and it is known as a divalent anion.

Monovalent Electropositive	Bivalent Electropositive	Trivalent Electropositive	Tetravalent Electropositive
1. Hydrogen H^+	1. Magnesium Mg^{2+}	1. Aluminium Al^{3+}	1. Stannic [Tin (IV)] Sn^{4+}
2. Ammonium NH_4^+	2. Calcium Ca^{2+}	2. Ferric [Iron (III)] Fe^{3+}	2. Plumbic [Lead (IV)] Pb^{4+}
3. Sodium Na^+	3. Zinc Zn^{2+}	3. Chromium Cr^{3+}	
4. Potassium K^+	4. Plumbous [Lead (II)] Pb^{2+}		
5. Cuprous [(Copper (I)] Cu^+	5. Cupric [(Cupper) (II)] Cu^{2+}		
6. Argentous [Silver (I)] Ag^+	6. Argentic [Silver(II)] Ag^{2+}		
7. Mercurous [Mercury(I)] Hg_2^+	7. Stannous [Tin (II)] Sn^{2+}		
	8. Ferrous [Iron (II)] Fe^{2+}		
	9. Mercuric [Mercury (II)] Hg^{2+}		
	10. Barium Ba^{2+}		

LIST OF COMMON ELECTROVALENT RADICALS

Monovalent Electronegative	Bivalent Electronegative	Trivalent Electronegative	Tetravalent Electronegative
1. Fluoride F^-	1. Sulphate SO_4^{2-}	1. Nitride N^{3-}	1. Carbide C^{4-}
2. Chloride Cl^-	2. Sulphite SO_3^{2-}	2. Phosphide P^{3-}	
3. Bromide Br^-	3. Sulphide S^{2-}	3. Phosphite PO_3^{3-}	
4. Iodide I^-	4. Thiosulphate $S_2O_3^{2-}$	4. Phosphate PO_4^{3-}	
5. Hydride H^-	5. Zincate ZnO_2^{2-}		
6. Hydroxide OH^-	6. Oxide O^{2-}		
7. Nitrite NO_2^-	7. Peroxide O_2^{2-}		
8.Nitrate NO_3^-	8. Dichromate $Cr_2O_7^{2-}$		
9. Bicarbonate or Hydrogen carbonate HCO_3^-	9. Carbonate CO_3^{2-}		
10. Bisulphite or Hydrogen sulphite HSO_3^-	10. Silicate SiO_3^{2-}		
11. Bisulphide or Hydrogen sulphide HS^-			
12. Bisulphate or Hydrogen sulphate HSO_4^-			
13. Acetate CH_3COO^-			

Colour of Ions and Compounds

Colour of ions in aqueous solution

Ions	Colour of ions in aqueous solution
All Group I, II & III metal ions	Colourless
nh_4^+	Colourless
Pb^{2+}, Zn^{2+}	Colourless
Cu^{2+}	Blue or green
Fe^{2+}	Green
Fe^{3+}	Yellow or brown
Co^{2+}	Pink
Ni^{2+}	Green
Cr^{3+}	Green
Mn^{2+}	Very pale pink or colourless
All halide ions: F^-, Cl^-, Br~, I^-	Colourless
Most anions except $Mn0_4^-$, $Cr0_4^{2-}$, $Cr_20_7^{2-}$	Colourless
$Mn0_4$-	Purple
CrO^2-	Yellow
$Cr_20_7^2$-	Orange

Colour of halogens and halides

Free elements		In aqueous solution	In organic solvent	Halide ions in aqueous solution	Silver halides ppt	
$Cl_2(g)$	greenish yellow gas	Greenish yellow	Greenish yellow	Colourless	AgCl	white
$Br_2(l)$	dark red liquid	Brown	Red-orange		AgBr	creamy
$I_2(S)$	black solid	Brown	Purple		AgI	yellow

Colour of metal oxides

Metal oxides	Colour of metal oxides
All metal ions that is colourless in aqueous solution except PbO	White
CuO	Black
Cu_2O	Red
HgO	Red
Fe_2O_3	Black
Fe_3O_4 (iron (II) iron (III) oxide)	Black
PbO	Yellow
FeS	Black

Colour of Transition metals

$FeSO_4 \cdot 7H_2O$ → green solid
$[Fe(H_2O)_6]^{+2}$ → green solution
$CoCl_2 \cdot 6H_2o$ → red solid
$CoCl_2$ → Blue solid
$[Co(H_2O)_6]^{+2}$ → Pink Solution
$CuO_3 \cdot Cu(OH)_2$ → green ppt
$[Fe(H_2O)_6]^{+3}$ → Pale violet solution
$[Fe(H_2O)_3(OH)_3]$ → brown ppt
$[Cr(NH_3)_6]^{+3}$ → purple solution
$[Al(H_2O)_6]^{+2}$ → Colourless solution
$[Al(H_2O)_3\ (OH)_3]$ → white ppt

Some other compounds

Na_2SO_4 → colourless
$Ba(NO_3)_2$ → colourless
$Pb(NO_3)_2$ → colourless
$K_2Cr_2O_7$ → orange
$PbSO_4$ → milky white
$BaCr_2O_7$ → milky yellow
$FeCl_3$ → orange
K_2CrO_4 → yellow-green
$AgNO_3$ → colourless
$Cu(NO_3)_2$ → blue

$CuSO_4$ → blue
$ZnSO_4$ → Colourless
$CuCO_3$ → green
CuO → black
Pb_3O_4 → Red
PbO → yellow
PbO → yellow
PbI_2 → yellow ppt
$Fe(OH)_3$ → brown ppt
Cu → brown