IMPORTANT COLOURS IN CHEMISTRY

JEE Main | JEE Advanced | NEET | Class 12 – Complete Colour Sheet

DEV CHEMISTRY
Concept Clear Karo. Bahane Dolete Karo.

1. Flame Test Colours (s-Block Elements)

Element / Ion	Flame Colour	Image
Li^+	Crimson red	
Na^+	Golden yellow	
K^+	Lilac (pale violet)	
Rb^+	Red-violet	
Cs^+	Blue-violet	
Ca^{2+}	Brick red	
Sr^{2+}	Crimson red	
Ba^{2+}	Apple green	
Be^{2+}	No colour	
Mg^{2+}	No colour	

2. Halogen Molecular Colours

Halogen	State (RT)	Colour	Image
F_2	Gas	Pale yellow	
Cl_2	Gas	Greenish yellow	
Br_2	Liquid	Reddish brown	
I_2	Solid (vapour)	Grey-black solid (violet vapours)	

3. Halide Precipitates (AgX, PbI_2, HgI_2)

Compound	Colour	Image	Special Feature
AgCl	White		Soluble in dilute NH_4OH
AgBr	Cream / Pale yellow		Sparingly soluble in conc. NH_4OH
AgI	Yellow		Insoluble in NH_4OH
PbI_2	Bright yellow		Golden spangles on cooling hot solution
HgI_2	Scarlet red		Soluble in excess KI (K_2HgI_4)

4. Metal Sulphides (H_2S Group)

Compound	Colour	Compound	Colour
CuS	Black	CdS	Yellow
PbS	Black	As_2S_3	Yellow
HgS	Black	SnS_2	Yellow
CoS	Black	Sb_2S_3	Orange
Ni_2S_3	Black	ZnS	White
FeS	Black	MnS	Buff / Flesh

5. Important d-Block Ions and Oxoanions

Ion / Compound	Colour	Image
$KMnO_4$ / MnO_4^-	Deep purple / violet	
$K_2Cr_2O_7$ / $Cr_2O_7^{2-}$	Orange	
K_2CrO_4 / CrO_4^{2-}	Yellow	
Cr^{3+} (aq)	Green	
Fe^{3+} (aq)	Yellow / yellowish brown	
Fe^{2+} (aq)	Pale green	

6. Chromyl Chloride Test (Cl^-)

Test / Compound	Colour	Image
CrO_2Cl_2 vapours	Reddish brown / orange gas	
Na_2CrO_4 (in NaOH)	Yellow solution	
$PbCrO_4$ (with lead acetate)	Yellow precipitate	

7. Important Anion Tests

Ion / Test	Reagent	Colour / Observation	Image
NO_3^- (Brown ring test)	$FeSO_4$ + conc. H_2SO_4	Brown ring	
PO_4^{3-}	Ammonium molybdate + HNO_3	Canary yellow ppt	
CH_3COO^- (Acetate)	$FeCl_3$	Deep red / blood red solution	

8. Colours of Evolved Gases

Gas	Colour	Image
NO_2	Brown fumes	
Cl_2	Pale greenish yellow	
Br_2 vapours	Reddish brown	
I_2 vapours	Violet	
CO_2	Colourless	
SO_2	Colourless	
H_2S	Colourless	
HCl	Colourless	
NH_3	Colourless	

9. Cation Analysis – Group-wise Colours

Group I — Pb^{2+}, Ag^+, Hg_2^{2+}

Compound	Colour	Image
$PbCl_2$	White	
AgCl	White	
Hg_2Cl_2	White	

Group II — Cu^{2+}, Cd^{2+}, Pb^{2+}, Bi^{2+}, As^{3+}, Sb^{3+}, $Sn^{2+/4+}$

Compound	Colour	Image
Bi_2S_3	Dark brown / black	
$Bi(OH)_3$	White	
Bi (metal)	Black (after reduction)	
Cu^{2+} + $K_4[Fe(CN)_6]$	Chocolate brown	

Group III — Fe^{3+}, Al^{3+}, Cr^{2+}

Compound	Colour	Image
$Al(OH)_3$	White (gelatinous)	

Dissolves in excess NaOH

Group IV — Zn^{2+}, Mn^{2+}, Ni^{2+}, Co^{2+}

(Note: NH_4^+ test is separate, not a group reagent)

Nessler's reagent (for NH_4^+)	Brown ppt	

Group V — Ba^{2+}, Sr^{2+}, Ca^{2+}

Compound	Colour	Image
$BaCO_3$	White	
$SrCO_3$	White	
$CaCO_3$	White	
$BaCrO_4$	Yellow	

10. Borax Bead Test Colours

Metal	Oxidising Flame (Hot/Cold)	Reducing Flame (Hot/Cold)	Image
Cu	Green (hot), Blue (cold)	Colourless (hot), Red (cold)	
Fe	Yellowish brown (hot), Yellow (cold)	Green	
Cr	Green	Green	
Co	Deep blue	Deep blue	
Mn	Amethyst (violet)	Colourless	
Ni	Violet (hot), Reddish brown (cold)	Grey / opaque	

11. Organic Chemistry – Important Colour Tests

Test	Reagent / Condition	Colour / Observation	Image
Iodoform test	I_2 / NaOH	Yellow ppt (CHI_3)	
Lassaigne's test (N)	$FeSO_4$ + acid	Prussign blue	
Lassaigne's test (S)	Sodium nitroprusside	Violet / purple	
Phenol test	Neutral $FeCl_3$	Violet / green	
Victor Meyer test (1° alcohol)		Red (blood red)	
Victor Meyer test (2° alcohol)		Blue	
Victor Meyer test (3° alcohol)		Colourless	

12. Quick Revision – Special Cases

Compound / Ion	Colour	Image
CdS	Yellow	
MnS	Buff / Flesh	
ZnS	White	