



ST ANDREW'S SECONDARY SCHOOL

NAME

CLASS

CHEMISTRY

6092



Chemical Data of Common Ionic Compounds: A Summary

Solubility, colour, chemical analysis

		Cations											Chemical Analysis
		NH ₄ ⁺	Na ⁺ (K ⁺)	Ba ²⁺	Ca ²⁺	Al ³⁺	Fe ²⁺	Fe ³⁺	Cu ²⁺	Zn ²⁺	Pb ²⁺	Ag ⁺	
Anions	NO ₃ ⁻	NH ₄ NO ₃ ✓ colourless	NaNO ₃ ✓ colourless	Ba(NO ₃) ₂ ✓ colourless	Ca(NO ₃) ₂ ✓ colourless	Al(NO ₃) ₃ ✓ colourless	Fe(NO ₃) ₂ ✓ green	Fe(NO ₃) ₃ ✓ yellow	Cu(NO ₃) ₂ ✓ blue	Zn(NO ₃) ₂ ✓ colourless	Pb(NO ₃) ₂ ✓ colourless	AgNO ₃ ✓ colourless	NH ₃ gas evolved when warmed with aq. NaOH and Al foil.
	CO ₃ ²⁻	(NH ₄) ₂ CO ₃ ✓ colourless	Na ₂ CO ₃ ✓ colourless	BaCO ₃ X white	CaCO ₃ X white	X	FeCO ₃ X pale green	X	CuCO ₃ X green	ZnCO ₃ X white	PbCO ₃ X white	Ag ₂ CO ₃ X white	Effervescence observed with dilute acid. CO ₂ gas evolved forms white ppt in limewater.
	SO ₄ ²⁻	(NH ₄) ₂ SO ₄ ✓ colourless	Na ₂ SO ₄ ✓ colourless	BaSO ₄ X white	CaSO ₄ X white	Al ₂ (SO ₄) ₃ ✓ colourless	FeSO ₄ ✓ green	Fe ₂ (SO ₄) ₃ ✓ yellow	CuSO ₄ ✓ blue	ZnSO ₄ ✓ colourless	PbSO ₄ X white	Ag ₂ SO ₄ X white	White ppt formed with acidified aq. Ba(NO ₃) ₂ .
	OH ⁻	X	NaOH ✓ colourless	Ba(OH) ₂ ✓ colourless	Ca(OH) ₂ X white	Al(OH) ₃ X white	Fe(OH) ₂ X green	Fe(OH) ₃ X red-brown	Cu(OH) ₂ X blue	Zn(OH) ₂ X white	Pb(OH) ₂ X white	X	Red litmus paper turns blue / use pH paper.
	Cl ⁻	NH ₄ Cl ✓ colourless	NaCl ✓ colourless	BaCl ₂ ✓ colourless	CaCl ₂ ✓ colourless	AlCl ₃ ✓ colourless	FeCl ₂ ✓ green	FeCl ₃ ✓ yellow	CuCl ₂ ✓ green	ZnCl ₂ ✓ colourless	PbCl ₂ X white	AgCl X white	White ppt formed with acidified aq. AgNO ₃ .
	Br ⁻	NH ₄ Br ✓ colourless	NaBr ✓ colourless	BaBr ₂ ✓ colourless	CaBr ₂ ✓ colourless	AlBr ₃ ✓ colourless	FeBr ₂ ✓ green	FeBr ₃ ✓ brown	CuBr ₂ ✓ yellow-green	ZnBr ₂ ✓ colourless	PbBr ₂ X white	AgBr X cream	Cream ppt formed with acidified aq. AgNO ₃ .
	I ⁻	NH ₄ I ✓ colourless	NaI ✓ colourless	BaI ₂ ✓ colourless	CaI ₂ ✓ colourless	AlI ₃ ✓ colourless	FeI ₂ ✓ green	X	X	ZnI ₂ ✓ colourless	PbI ₂ X yellow	AgI X yellow	Yellow ppt formed with acidified aq. AgNO ₃ .
Chemical Analysis		NH ₃ gas evolved when heated with aq. NaOH.	Flame test Na ⁺ : Yellow K ⁺ : Lilac	(1) White ppt formed with acidified aq. Na ₂ SO ₄ . (2) Compare solubility of its OH ⁻ : ↑. (vs Ca ²⁺)	(1) White ppt formed with acidified aq. Na ₂ SO ₄ . (2) Compare solubility of its OH ⁻ : ↓. (vs Ba ²⁺)	(1) White ppt formed with aq. NH ₃ , insoluble in excess aq. NH ₃ . (2) No rxn with aq. NaCl. (vs Pb ²⁺)	Green ppt formed with aq. NaOH, insoluble in excess aq. NaOH.	Red-brown ppt formed with aq. NaOH, insoluble in excess aq. NaOH.	Light blue ppt formed with aq. NH ₃ , soluble in excess aq. NH ₃ giving a dark blue solution.	White ppt formed with aq. NH ₃ , soluble in excess aq. NH ₃ giving a colourless solution.	(1) White ppt formed with aq. NH ₃ , insoluble in excess aq. NH ₃ . (2) White ppt formed with aq. NaCl. (vs Al ³⁺)	White ppt formed with aq. NaCl.	

key

NH ₄ NO ₃	chemical formula
✓ / X	soluble in water (aq) / insoluble in water (ppt)
colourless	appearance

soluble in water (aq)

appearance