

dilute acid group radical

dry salt + dil. H ₂ SO ₄	colorless, odorless gas is evolved with brisk effervescence	CO ₃ ²⁻ may be present	aq. soln. of salt + MgSO ₄	appearance of white ppt	CO ₃ ²⁻ confirmed
dry salt + dil. H ₂ SO ₄	colorless gas with pungent smell of burning SO ₂	SO ₃ ²⁻ may be present	aq. soln. of salt + acidified K ₂ Cr ₂ O ₇ soln.	change in color, from orange to green	SO ₃ ²⁻ confirmed
dry salt + dil. H ₂ SO ₄	brown fumes	NO ₂ ⁻ may be present	aq. soln. of salt + thiourea + acetic acid + FeCl ₃ soln.	appearance of blood red color	NO ₂ ⁻ confirmed

Concentrated acid group radical

dry salt + dil. H ₂ SO ₄	no observation	dilute acid group radical absent				
dry salt + conc. H ₂ SO ₄ + Δ	pungent smelling gas, intense white fumes upon bringing a glass rod dipped in NH ₄ OH	Cl ⁻ may be present	orange fumes	B ⁻ may be present	violet vapors	I ⁻ may be present
ag. soln. of salt + dil. HNO ₃ + AgNO ₃ soln.	white ppt (soluble in excess in NH ₄ OH)	Cl ⁻ confirmed	pale yellow ppt (partially soluble in excess in NH ₄ OH)	B ⁻ confirmed	yellow ppt (insoluble in excess in NH ₄ OH)	I ⁻ may be present
dry salt + conc. H ₂ SO ₄ + Δ	vingar like smell	CH ₃ COO ⁻ may be present	aq. soln. of salt + neutral ferric chloride (FeCl ₃)	red colour is observed	CH ₃ COO ⁻ is confirmed	
dry salt + conc. H ₂ SO ₄ + Δ	brown fumes	No ₃ ⁻ may be present	aq. soln. of salt + freshly prepared FeSO soln. + few drops of H ₂ SO ₄ (through the sides of the tube without disturbing the solution)	brown ring is formed in the test tube	No ₃ ⁻ confirmed	

acid independent group radical

dry salt + dil. H ₂ SO ₄	no observation	dilute acid group radical absent				
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acid independent group radical (cont)

dry salt + conc. $\text{H}_2\text{SO}_4 + \Delta$	no observation	conc. acid group radical absent
aq. soln. of salt + BaCl_2 soln.	white ppt (insoluble in conc. HCl)	SO_4^{2-} confirmed
aq. soln. of salt + conc HNO_3 + $(\text{NH}_4)\text{MnO}_4$ soln. + Δ	canary yellow ppt	PO_4^{3-} confirmed



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