

Identification of some Organic functional groups

Functional group	Experiments to specify compounds						
Carboxylic acid $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$	NaHCO ₃ (Acidity Test) +ve.						
Alkene $\text{R}-\text{C}=\text{C}-\text{R}'$	-ve.	Br ₂ /CCl ₄ Test +ve.					
Alkyl halide R-X	-ve.	-ve.	Beilestien's Test +ve.				
Aldehyde $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$	-ve.	-ve.	-ve.	2,4DNPH Test +ve.	Tollen's Test <i>Asilver mirror</i> +ve.	Iodoform test (I ₂ /NaOH) For methylated C=O	
Ketone $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}'$	-ve.	-ve.	-ve.	+ve.	-ve.	For methylated C=O	
Alcohol R-O-H	-ve.	-ve.	-ve.	-ve.	-ve.	Lucas Test (ZnCl ₂ /HCl) 3°alc. gives immediate ppt. 2°alc. after 8 min., 1° after >2 hrs.	
Amine $\begin{array}{ccc} \text{R}-\underset{\text{H}}{\underset{ }{\text{N}}}-\text{H} & \text{R}-\underset{\text{R}'}{\underset{ }{\text{N}}}-\text{H} & \text{R}-\underset{\text{R}'}{\underset{ }{\text{N}}}-\text{R}'' \\ & & \end{array}$	-ve.	-ve.	-ve.	-ve.	-ve.	Hinsburg Test (benzenesulfonyl chloride) If ppt. appear...1° amine If gummy ppt...2° amine If clear sol. ...3° amine	
Ester $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{R}'$	-ve.	-ve.	-ve.	-ve.		-ve.	Ferric hydroxamate test