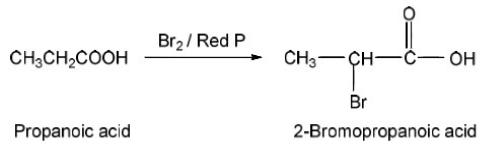
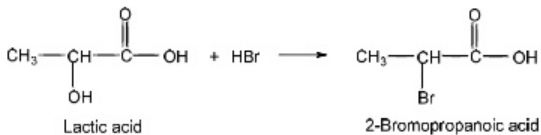


6.10.1 PREPARATION OF HALO ACIDS:

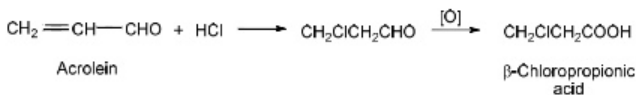
1. Hell Volhard Zelinski reaction: Aliphatic carboxylic acids on reaction with bromine in the presence of phosphorous produce α - halo acids. This reaction is known as Hell Volhard Zelinski reaction.



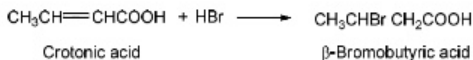
2. By hydroxy acids: α -halo acids can be obtained by the treatment of α - hydroxy acids with HCl or HBr.



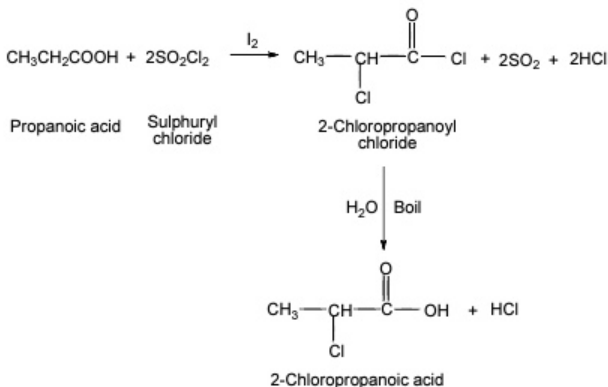
3. **By α , β -unsaturated aldehydes:** α , β -unsaturated aldehydes on reaction with halogen acids followed by oxidation produce β -halo acids.



4. **By α , β -unsaturated carboxylic acids:** α , β -unsaturated carboxylic acids on reaction with halogen acids produce halo acids.



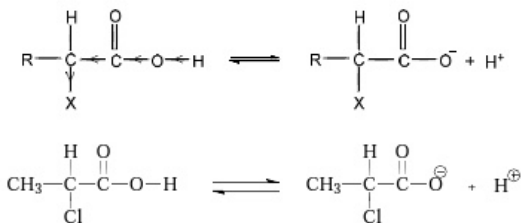
5. **By the reaction of sulphuryl chloride on carboxylic acids:** Reaction with SO_2Cl_2 in presence of iodine carboxylic acid gives halo acid.



6.10.2 CHEMICAL REACTIONS OF HALO ACIDS:

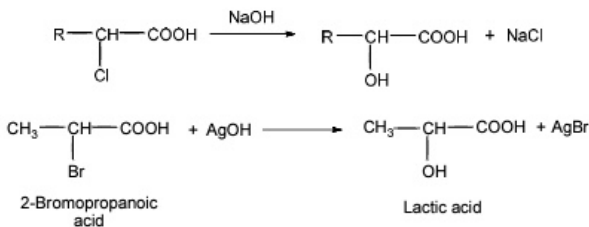
Halo acids show the similar properties as carboxylic acids. Halo acids are also gives the reactions of halogen group. The main reactions of halo acids are as follows:

1. Acidic strength: The halo acids are more acidic than carboxylic acids because halogens are more electronegative than other atoms therefore a halogen atom withdraws the electron pairs towards it and help to release the proton; since the halo acids are more acidic than the normal acids.

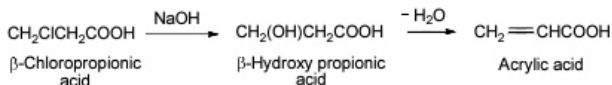


2. Reaction due to halogen atom

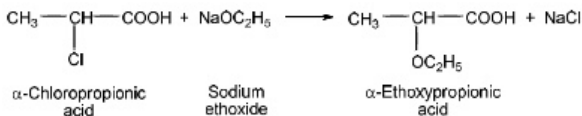
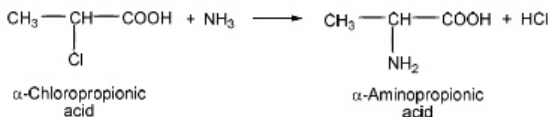
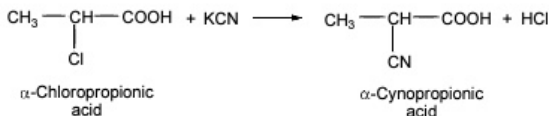
(i) **Reaction with alkali;** α -halo acids undergo alkaline hydrolysis form the α -hydroxy acids.



While, β -halo acids on reaction with alkali form β -hydroxy acid and α, β -unsaturated acid.

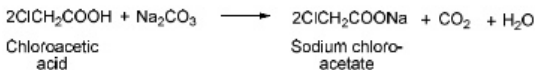
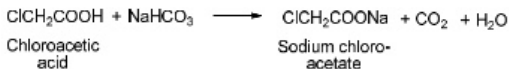


(ii) Nucleophilic substitution reactions: The halogen group present in a halo acid can be replaced by nucleophiles such as $-\text{CN}$, NH_3 , or $-\text{OC}_2\text{H}_5$.

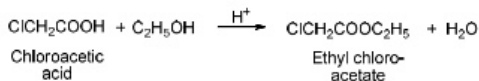


3. Reaction due to $-\text{COOH}$ group

(i) Action with NaHCO_3 or Na_2CO_3 : On reaction with NaHCO_3 or Na_2CO_3 halo acids decompose to release carbon dioxide.



(ii) Reaction with alcohols: Halo acids react with alcohols to form the esters.



(iii) Reaction with PCl_5 : They also react with PCl_5 to form the acid chlorides.