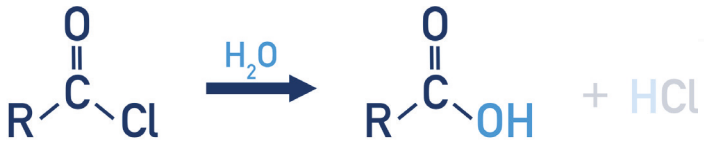
Organic Chemistry Revision Sheets
Acyl Chlorides | Nucleophilic Addition-Elimination (with water)

Reaction

REACTANTS: Acyl Chloride and H_2O
PRODUCT: Carboxylic Acid and HCl
REACTION TYPE: Nucleophilic Addition-Elimination, *Hydrolysis of acyl chloride*

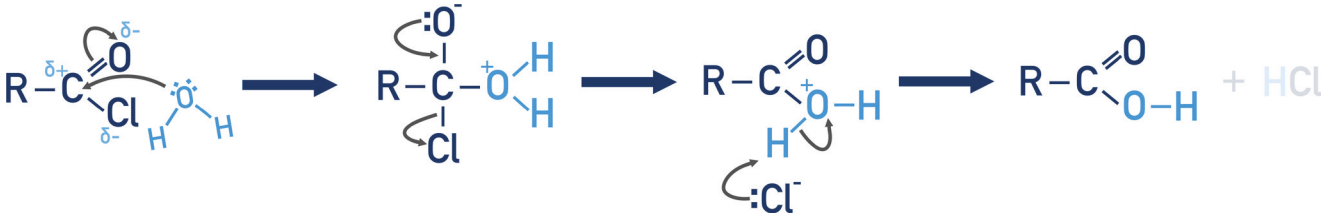
REACTION:



Acyl Chloride Carboxylic Acid

Mechanism

H_2O acts as a **nucleophile** due to the lone pair of electrons on the oxygen atom attacking the carbon (with a partial positive charge) in the acyl chloride. A new carbon-oxygen bond forms and the carbon-oxygen double bond breaks to a single bond, giving the oxygen a negative charge. The carbon-oxygen double bond reforms, the carbon-chlorine bond breaks and a chloride ion is removed. The chloride ion removes a H^+ ion from $-OH_2^+$ group, forming RCOOH. ***Addition-elimination reaction.***



Notes:

- Acyl chlorides are highly reactive and the reaction is vigorous, with heat given off (exothermic) and fumes of HCl released.