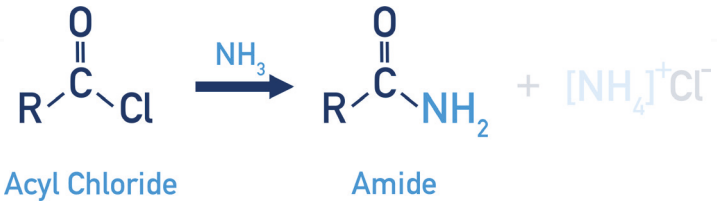
Reaction

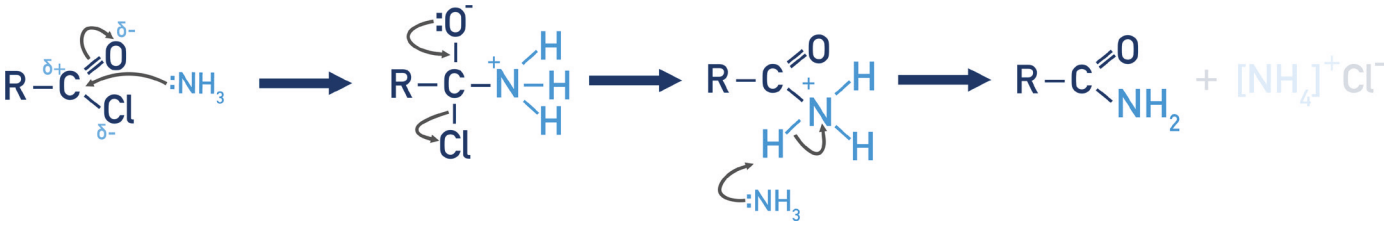
REACTANTS: Acyl Chloride and Ammonia
PRODUCT: Amide and Ammonium Chloride (salt)
REACTION TYPE: Nucleophilic Addition-Elimination

REACTION:



Mechanism

The ammonia acts as a **nucleophile** due to the lone pair of electrons on the nitrogen atom attacking the carbon (with a partial positive charge) in the acyl chloride. A new carbon-nitrogen bond forms between the acyl group and the ammonia. 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 ammonia present removes H^+ ion from $-RCONH_3^+$ group. ***Addition-elimination reaction.***



Notes:

- Ammonia produces a **primary amide** and ammonium chloride salt when reacted with acyl chlorides.
- Primary amines produce a **secondary amide** and an alkyl ammonium chloride salt when reacted with acyl chlorides.
- Secondary amines produce a **tertiary amide** and an alkyl ammonium chloride salt when reacted with acyl chlorides.