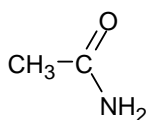
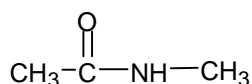


6.15 Amides

Amides are neutral



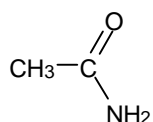
Primary amide
ethanamide



Secondary amide
N-methylethanamide

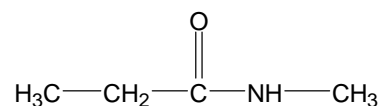
Naming Amides

Add **-amide** to the stem name

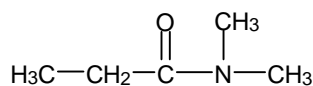


ethanamide

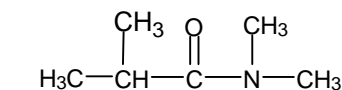
Secondary and tertiary amides are named differently to show the two (or three) carbon chains. The smaller alkyl group is preceded by an -N which plays the same role as a number in positioning a side alkyl chain



N-methylpropanamide



N,N-dimethylpropanamide



N,N,2-trimethylpropanamide

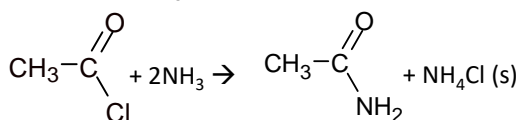
Formation of amides

Reaction of acyl chloride with ammonia

Change in functional group: **acyl chloride** → **primary amide**

Reagent: **ammonia**

Conditions: **room temp.**



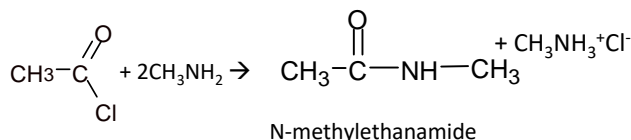
Observation: white smoke of NH_4Cl is given off

Reaction of acyl chloride with primary amines

Change in functional group: **acyl chloride** → **secondary amide**

Reagent: **primary amine**

Conditions: **room temp.**



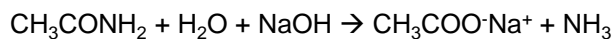
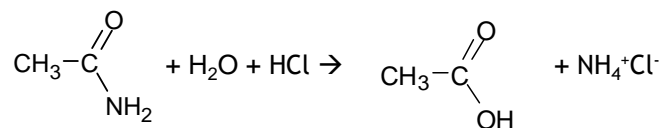
Reactions of amides

Amide hydrolysis

Primary amides can be hydrolysed by concentrated acids or alkalis.

With HCl an amide will be hydrolysed and split up into a carboxylic acid and an ammonium salt

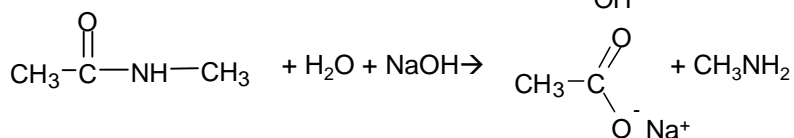
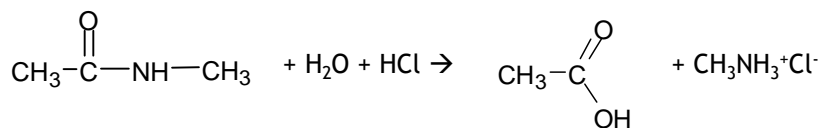
With NaOH an amide will be hydrolysed and split up into ammonia and the carboxylic acid salt



Secondary amides can be hydrolysed by aqueous acids or alkalis.

With HCl an amide will be hydrolysed and split up into a carboxylic acid and an amine salt

With NaOH an amide will be hydrolysed and split up into the amine and the carboxylic acid salt



Reduction of amides with LiAlH_4

reduce an amide to amine by using LiAlH_4 in ether

This reaction is then followed by reaction with a dilute acid, such as dilute sulfuric or hydrochloric acid.

