

CAIE Chemistry A-level

Topic 18 - Carboxylic Acids and Derivatives

Flashcards

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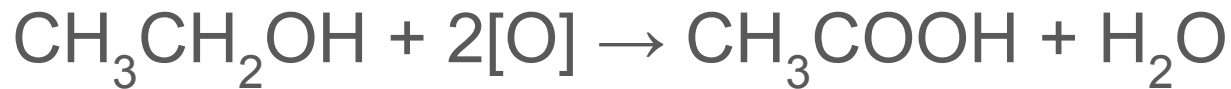


How are primary alcohols oxidised to carboxylic acids?



How are primary alcohols oxidised to carboxylic acids?

If a primary alcohol is heated under reflux with acidified potassium dichromate(VI), the alcohol will be oxidised to form a carboxylic acid.



The acidified potassium dichromate(VI) will change colour from orange to green.



How are aldehydes oxidised to carboxylic acids?



How are aldehydes oxidised to carboxylic acids?

If an aldehyde is heated under reflux with acidified potassium dichromate(VI), the aldehyde will be oxidised to form a carboxylic acid.



The acidified potassium dichromate(VI) will change colour from orange to green.



How do nitriles react to form carboxylic acids?



How do nitriles react to form carboxylic acids?

Nitriles react via acid hydrolysis to form carboxylic acids. The nitrile is heated under reflux with a strong acid catalyst to produce the carboxylic acid.



Give the equation for the acid hydrolysis
of ethanenitrile



Give the equation for the acid hydrolysis of ethanenitrile



How do carboxylic acids react with metals?



How do carboxylic acids react with metals?

Carboxylic acids react with metals to form a salt and hydrogen gas.



What is the chemical equation for the reaction of ethanoic acid with sodium?



What is the chemical equation for the reaction of ethanoic acid with sodium?



How do carboxylic acids react with carbonates?



How do carboxylic acids react with carbonates?

Carboxylic acids react with carbonates to form a salt, carbon dioxide and water.



What is the chemical equation for the reaction of ethanoic acid with sodium carbonate?



What is the chemical equation for the reaction of ethanoic acid with sodium carbonate?

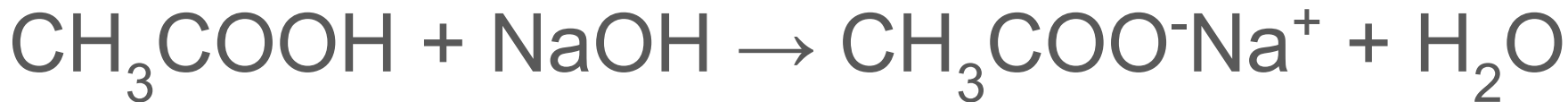


How do carboxylic acids react with alkalis?



How do carboxylic acids react with alkalis?

Carboxylic acids react with alkalis to form a salt and water:



How do alcohols react with carboxylic acids?



How do alcohols react with carboxylic acids?

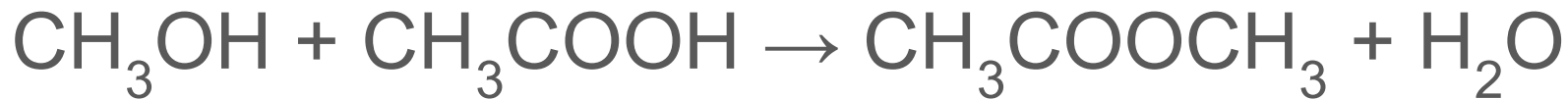
Alcohols react with carboxylic acids to form esters. This process is called esterification and requires heating with a sulfuric acid catalyst.



What is the chemical equation for the reaction between methanol and ethanoic acid? Give the name of the ester formed



What is the chemical equation for the reaction between methanol and ethanoic acid? Give the name of the ester formed



Product $\text{CH}_3\text{COOCH}_3$ is methyl ethanoate.



How do carboxylic acids form alcohols?



How do carboxylic acids form alcohols?

Reduction with LiAlH_4



What is the chemical equation for the reduction of ethanoic acid?



What is the chemical equation for the reduction of ethanoic acid?

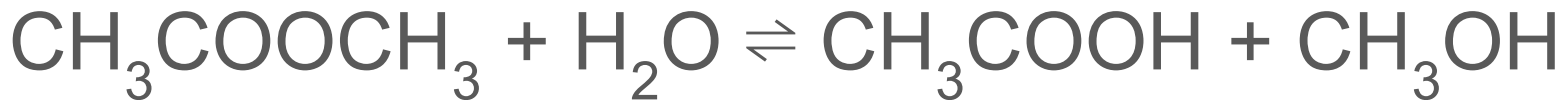


How do esters undergo acid hydrolysis?



How do esters undergo acid hydrolysis?

Heat the ester under reflux with dilute aqueous acid. The ester will be hydrolysed into a carboxylic acid and alcohol. The reaction is slow and reversible.



How do esters undergo base hydrolysis?



How do esters undergo base hydrolysis?

Heat the ester under reflux with a dilute alkali.

The ester will be hydrolysed into the salt of the carboxylic acid, and the alcohol. The reaction is one-way and faster than acid hydrolysis.



State the major commercial uses of esters



State the major commercial uses of esters

- Perfumes
- Solvents
- Flavourings

