Esters can be cleaved back into a carboxylic acid and an alcohol by reaction with water and a base. The reaction is called a saponification from the Latin *sapo* which means soap. The name comes from the fact that soap used to be made by the ester hydrolysis of fats. Due to the basic conditions a carboxylate ion is made rather than a carboxylic acid.

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**General reaction**

\[
\begin{array}{c}
\text{Ester} \quad \xrightarrow{\text{H}_2\text{O}, \text{NaOH}} \quad \text{Carboxylate} + \text{Alcohol}
\end{array}
\]

**Example 1:**

\[
\begin{align*}
\text{H}_2\text{O} \quad &\xrightarrow{\text{NaOH}} \quad \text{R}^\text{C}=\text{O}^- + \text{HO-CH}_2\text{CH}_3
\end{align*}
\]

**Mechanism**

1) Nucleophilic attack by hydroxide

![Mechanism Step 1](image)

2) Leaving group removal

![Mechanism Step 2](image)

3) Deprotonation

![Mechanism Step 3](image)
Contributors

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