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.

**General reaction**

\[
\text{Ester} + \text{H}_2\text{O} + \text{NaOH} \rightarrow \text{Carboxylate} + \text{Alcohol}
\]

Example \((\PageIndex{1})\)

\[
\text{PhCOOCH}_2\text{CH}_3 + \text{H}_2\text{O} \xrightarrow{\text{NaOH}} \text{PhCOO}^- + \text{HO-CH}_2\text{CH}_3
\]

**Mechanism**

Step 1: Nucleophilic attack by hydroxide

Step 2: Leaving group removal

Step 3: Deprotonation
Contributors

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