Carboxylic acids react with Thionyl Chloride ($\text{SOCl}_2$) to form acid chlorides. During the reaction the hydroxyl group of the carboxylic acid is converted to a chlorosulfite intermediate making it a better leaving group. The chloride anion produced during the reaction acts a nucleophile.

**General Reaction**

\[
\text{R-OH} + \text{SOCl}_2 \rightarrow \text{R-Cl} + \text{HCl} + \text{SO}_2
\]

**Example**

\[
\text{Ph-COOH} + \text{SOCl}_2 \rightarrow \text{Ph-COCl}
\]

**Mechanism**

1) Nucleophilic attack on Thionyl Chloride

2) Removal of Cl leaving group

3) Nucleophilic attack on the carbonyl

4) Leaving group removal
5) Deprotonation

Contributors

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