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 as a nucleophile.

**General Reaction**

$$\text{RCOOH} + \text{SOCl}_2 \rightarrow \text{RCONCl} + \text{HCl} + \text{SO}_2$$

**Example**

$$\text{C}_6\text{H}_5\text{COOH} + \text{SOCl}_2 \rightarrow \text{C}_6\text{H}_5\text{CONCl}$$

**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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