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

\[
\text{RCOOH} + \text{SOCl}_2 \rightarrow \text{RCOCI} + \text{HCl} + \text{SO}_2
\]

### Example

![Example Reaction](image)

### Mechanism

1) Nucleophilic attack on Thionyl Chloride

![Mechanism 1](image)

2) Removal of Cl leaving group

![Mechanism 2](image)

3) Nucleophilic attack on the carbonyl

![Mechanism 3](image)

4) Leaving group removal

![Mechanism 4](image)
5) Deprotonation

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