

TOWED UPHILL

The uphill carboxyloids are useful materials in terms of being able to make other compounds. For example, a thioester such as acetyl coenzyme A may be able to make a variety of acyl esters. In the laboratory, acid chlorides are very common starting materials to make other carboxyloids. However, if they are so far uphill, how are they formed in the first place?

The two most common methods of making acid chlorides are treatment with thionyl chloride or with oxalyl chloride.

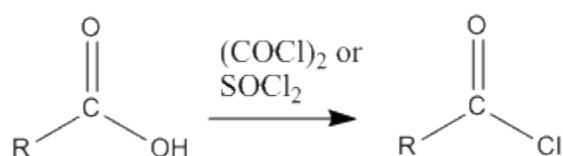


Figure CX5.1. Possible syntheses of an acid chloride.

The key part of making the uphill acid chloride out of the downhill carboxylic acid is the reagent used. Structurally, the reagents can be compared to acid chlorides themselves. They can be thought of as being a little bit like uphill carboxyloids themselves. Thus, as one compound gives its chloride and gets oxygenated on its way downhill, it provides the energy needed to drive the carboxylic acid uphill.

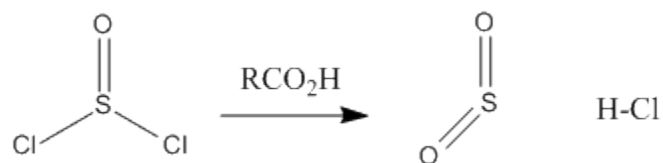


Figure CX5.2. Conversion of thionyl chloride to sulfur dioxide and hydrochloric acid.

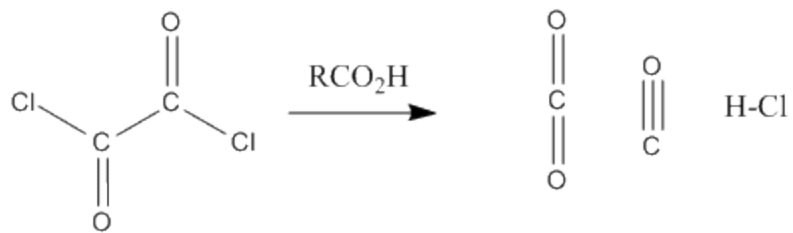


Figure CX5.3. Conversion of oxalyl chloride to carbon dioxide, carbon monoxide and hydrochloric acid.

