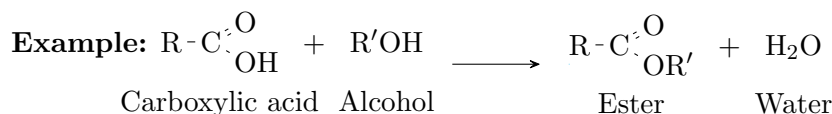


In a reaction between organic molecules, it is *only* the functional groups that participate in the reaction.



In this reaction, the hydroxide from the alcohol and the hydrogen from the acid will react, forming water. This will leave the alkyl with a free radical from the alcohol to bond to the O_2CR from the carboxylic acid. This yields an ester.

1 Reaction Mechanisms of Alkanes

There are two ways in which an alkane can react,

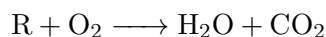
1. Combustion
2. Free radical substitution

1.1 Combustion

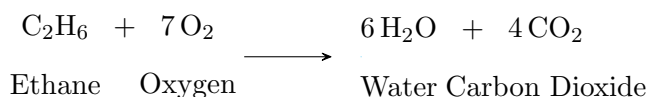
There are two types of alkane combustion, complete and incomplete. In combustion, all bonds are broken and then reformed.

1.1.1 Complete Combustion

Complete combustion requires excess air/oxygen.

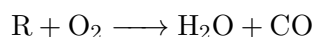


A specific example would be:

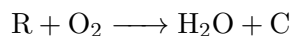


1.1.2 Incomplete Combustion

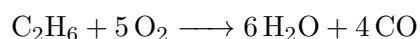
Incomplete combustion is when air/oxygen is not in excess.



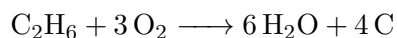
and



A more specific example would be the incomplete combustion of ethane:



This reaction yields carbon monoxide, a very dangerous gas. The second reaction in the incomplete combustion of ethane is:



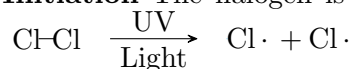
This reaction yields carbon, or soot.

1.2 Free Radical Substitution

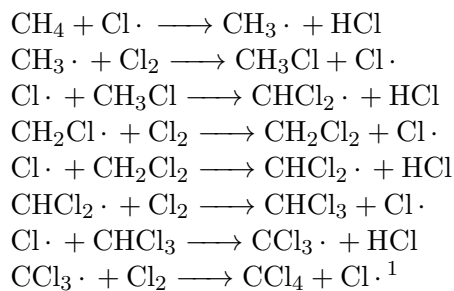


1.2.1 Mechanism of Reaction

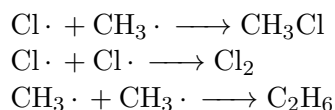
Initiation The halogen is broken apart by homolytic fission, yielding two free radicals.



Propagation The halogen free radicals react with the other compounds present in the reaction mixture in some of the following ways:



Termination Radicals combine to create stable compounds, ending the chain reaction.



The reaction also has the byproducts of all the propagation steps.

¹CCl₄ is very very bad for you