How ethanol is made using FERMENTATION

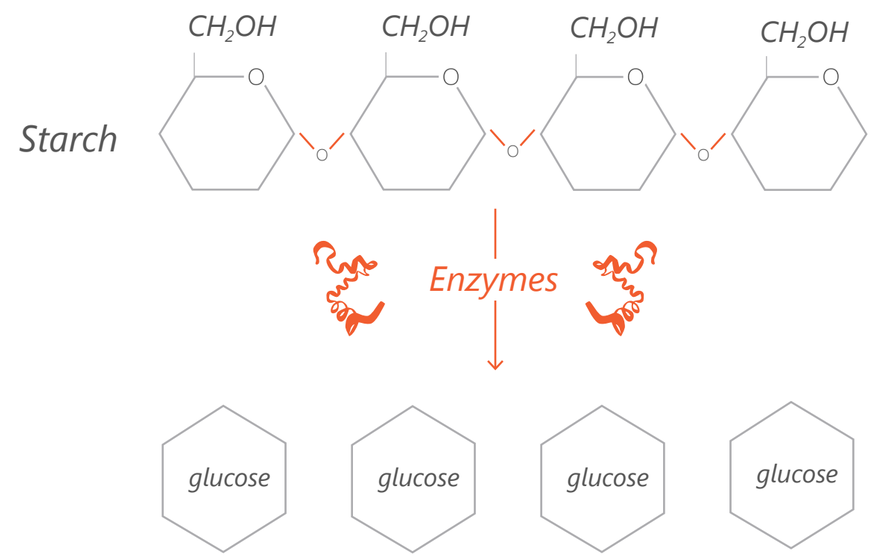
Basic conversion processes

During fermentation, microbes convert the sugars found in plant molecules into a transportation fuel called ethanol.

1

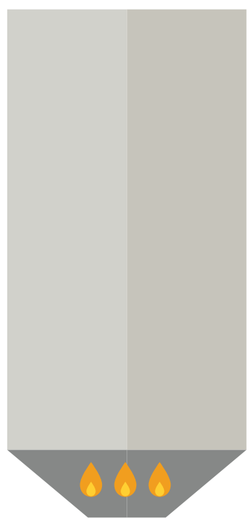
Starches decompose easily and can be fermented into biofuels. To begin the process, starchy biomass is ground up and combined with water to form a mash.

2



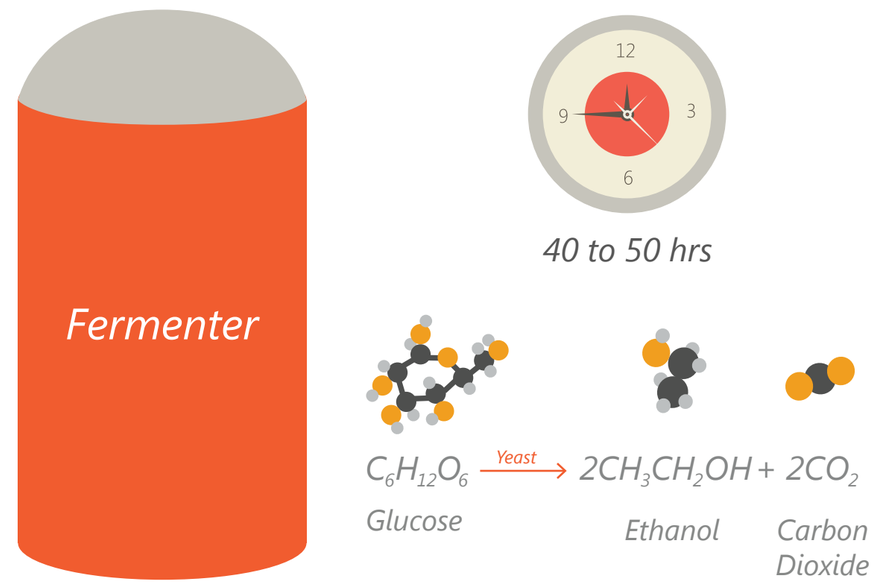
Enzymes are added to break down the starch into simple sugars like glucose. The enzymes can be common alpha amylase enzymes, such as those found in human saliva.

3



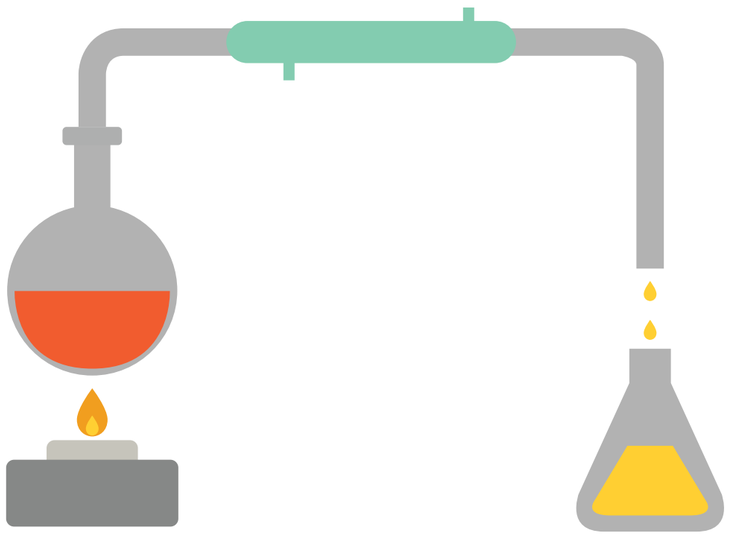
The mash is fed to a high temperature cooker in order to reduce bacteria levels.

4



It is then cooled and transferred to fermenters. Yeast is added to convert the sugars into ethanol and CO_2. The mixture is fermented for 40 to 50 hours.

5



The ethanol is distilled from other substances in the mixture. It is then concentrated and dehydrated.

6

The ethanol is often blended with a substance that makes it undrinkable. It is now ready for use as a transport fuel.

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Adapted from information provided by the Renewable Fuels Association.

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