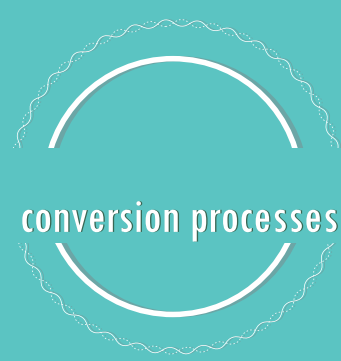
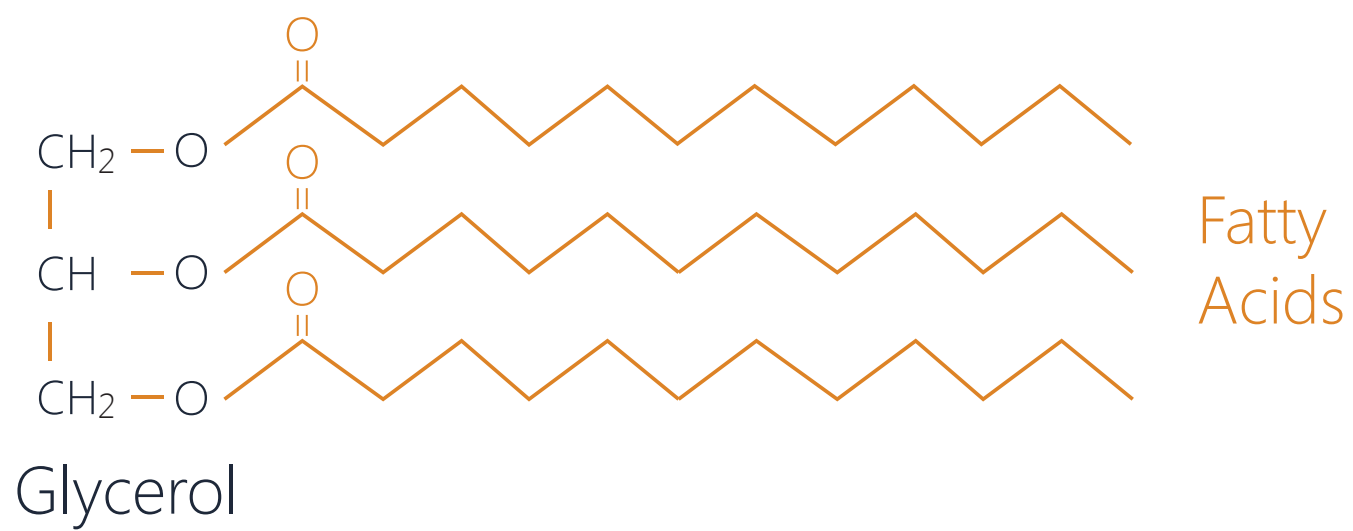


How biodiesel is made using TRANSESTERIFICATION



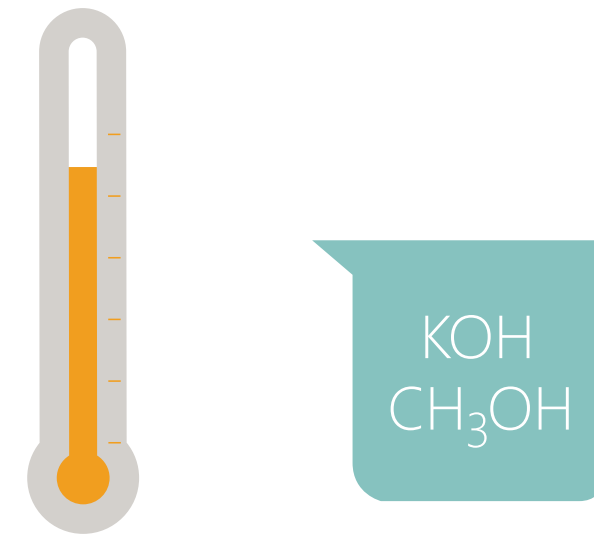
During transesterification, fatty oil molecules are heated up and react with methanol to create a transport fuel called biodiesel.

1



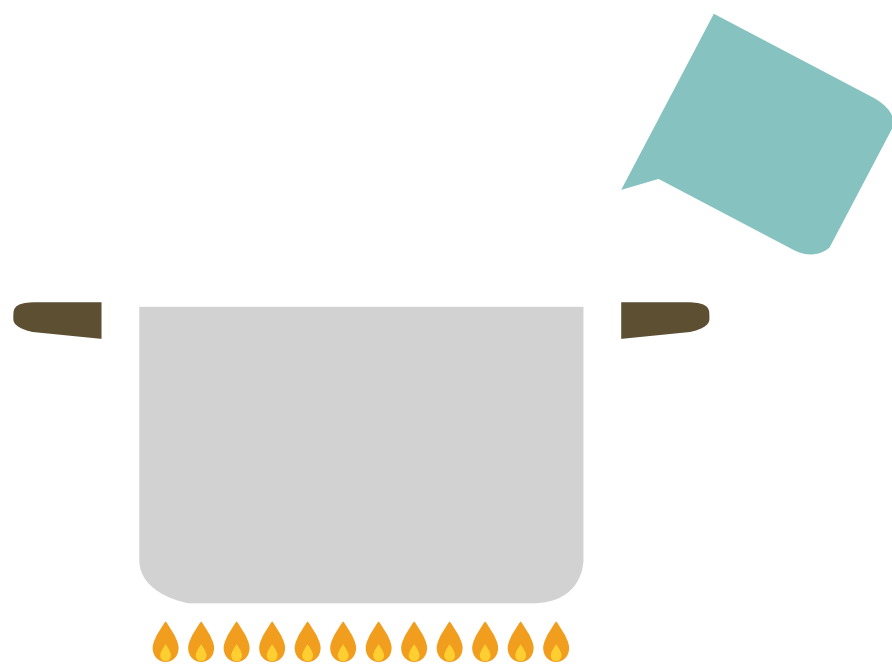
Vegetable oils are made up of glycerol molecules and long, fatty-acid molecules. A vegetable oil (e.g. canola oil) can be made into biodiesel by a simple chemical reaction with an alcohol and a strong acid or base catalyst.

2



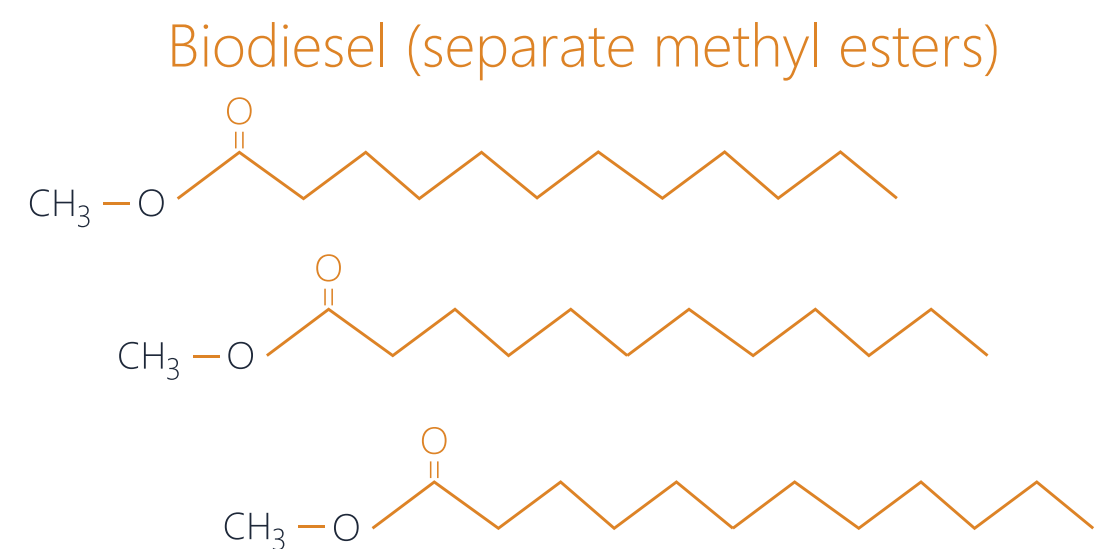
One method involves heating the vegetable oil in the presence of methanol and potassium hydroxide.

3



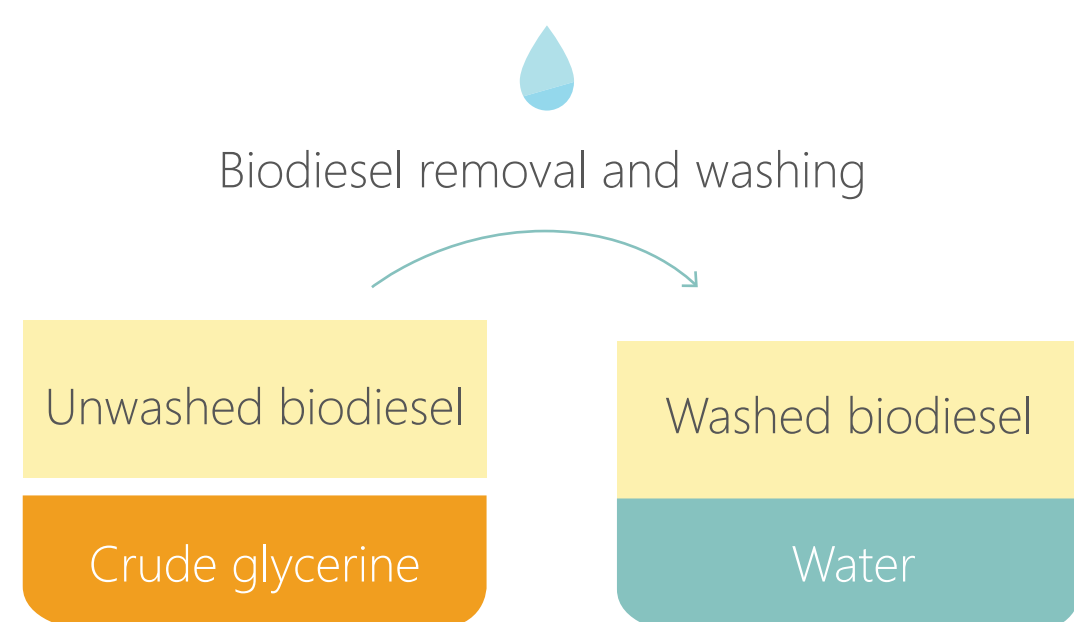
The heat and potassium hydroxide strips the fatty acids from the glycerol (forming crude glycerine) and enables a methanol molecule to attach to each fatty acid forming methyl esters, a form of biodiesel.

4



The methyl esters are formed in the mixture, but need to be separated from the glycerine, excess methanol, and other impurities.

5



The biodiesel methyl esters are less dense and will naturally separate from the glycerine. The biodiesel phase is removed and mixed with water. The water dissolves excess methanol and other impurities, and again, the biodiesel naturally separates into a lighter, separate phase.

6



Once the water and other impurities are extracted from the biodiesel, it can be used as a transport fuel.

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Adapted from information provided by the Energy Systems Research
Unit at the University of Strathclyde and Utah Biodiesel Supply.