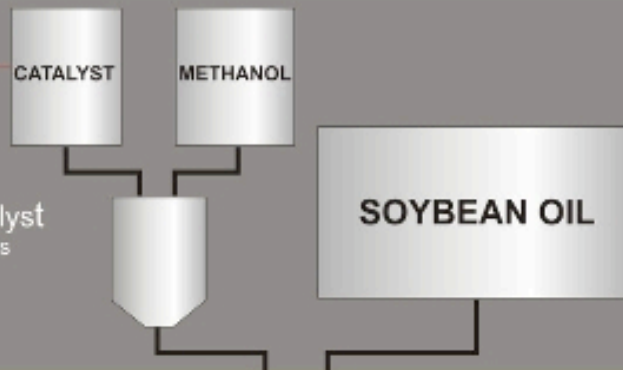


Mixing of Methanol and Catalyst

A catalyst, typically sodium hydroxide is dissolved in methanol.



SOYBEAN OIL
Biodiesel is produced from vegetable oil or animal fat. One metric ton of soybeans yields approximately 195 litres of Biodiesel

REACTION

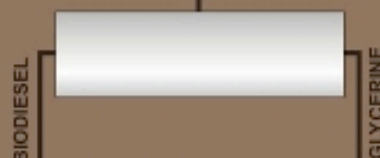
The methanol/catalyst mix and oil or fat are added together and heated, producing a reaction called "transesterification". This results in two major products: Glycerine and Biodiesel. Technically biodiesel is a methyl ester.

Biodiesel is formed by removing the glycerol molecule from vegetable oil. Once the glycerine is removed from the oil, the remaining molecules are, to a diesel engine, similar to petroleum diesel fuel

SETTLING

Glycerine is much more dense than biodiesel, and the two can be gravity-separated with glycerine simply drawn off the bottom of the settling vessel.

RECOVERED METHANOL



WASH

Biodiesel must be washed with water to remove contaminants. Water is heavier than biodiesel and absorbs the excess methanol sodium hydroxide and soap suspended in it. After washing and settling, the water can be drained from the bottom of the container. Several wash cycles are generally needed.



GLYCERINE NEUTRALISATION
The glycerine byproduct contains unused catalyst and soaps that are neutralized with an acid. Water and methanol are removed to produce 80 percent to 88 percent pure glycerine. Which is ready to be sold as crude glycerine or further refined to pharmaceutical grade.

METHANOL RECOVERY

Excess methanol remaining in the biodiesel and glycerin are removed through distillation and recycled for reuse.

DISTILLATION COLUMNS



PRODUCT QUALITY AND REGISTRATION

Prior to use as a commercial fuel, the finished biodiesel must be analysed using sophisticated equipment to ensure it meets Australian, European or American specifications.



GLYCERINE USES
Glycerine has numerous uses; food preservatives, emulsifiers, lotions, printing inks, confectionary antifreeze and clear soaps

FINAL PRODUCT

The finished biodiesel is shipped to fuel distributors by rail or truck, to be sold as pure biodiesel or blended with petroleum diesel.

