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An overview on bio fuels

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DESCRIPTION

The first creation of biodiesel is commonly referred to as the mixture of Fatty Acid Methyl Esters (FAME) produced from vegetable oils and animal fats *via* their transesterification reaction. Several output methods are available, which employ the use of homogeneous, heterogeneous, orbio-catalysts. The mainly used commercial technology for biodiesel product is the transesterification reaction of the triglyceride of the fatty acid with methanol under the basic conditions (e.g. sodium hydroxide as the catalyst) to yield the methyl ester of the fatty acid (biodiesel). In addition, different types of biofuels can be produced from vegetable oils and fats. Comparable include, for example, primary use of Straight Vegetable Oils (SVO) as fuels. This operation is less common and isn't considered promising due to inferior properties of SVO with regard to the diesel fuels. In addition to the commonly used FAME diesel, a biodiesel can be attained from vegetable oils *via* their hydrocracking. Such a diesel is substantially composed of alkanes and is similar to petroleum diesel or the coming generation fischer-tropsch diesel.

However, since it's obtained from the food harvests (oil) it is, still, considered as the first development of biodiesel. Its production technology is less developed but is accepted by some to be in the next future a competitive option to the FAME diesel. Feed stocks for first generation of biodiesel primarily include vegetable oil obtained from oil (energy) crops, as well as recycled oil, animal fats, algae, etc. Different feed stocks may require diverse conditions of treatment and different pretreatment technology to be espoused, successively, the cost and complexity of the process and the quality of the product can contrast. The issues related to the production technologies for biodiesel of the first generation, including biodiesel produced by vegetable oil hydrocracking. The use of straight vegetable oils as fuels, directly or as blends, is also described. Production of other types of biodiesel, e.g. second generation synthetic biodiesel from bio-SNG (Synthetic Natural Gas).

The majority of the methyl esters are produced utilizing the base catalyzed reaction because it's the most economic for several reasons that are described as low temperature and strain, high yields and short reaction times, immediate conversion process. Easy in operation and environmentally safe, transesterification can be defined as the process of reacting a triglyceride (oil) with an alcohol (e.g., methanol or ethanol) in the presence of a catalyst, such as sodium hydroxide or potassium hydroxide, to chemically break the molecule of the oil into methyl or ethyl esters. Glycerol, also known as glycerine, is the by product of this reaction. The operation is similar to hydrolysis, except than alcohol is used instead of water.

CONCLUSION

Transesterification consists of a composition of consecutive, reversible reactions. Diglycerides and monoglycerides are the intermediates in this process. The triglyceride is converted accretive to diglyceride, monoglyceride and eventually glycerol. The responses are reversible, although the equilibrium lies towards the production of fatty acid esters and glycerol. A little excess of alcohol is used to shift the equilibrium towards the formation of esters. In sight of excess alcohol, the foreword reaction ispseudo-first order and the reverse reaction is established to be second order. It was also observed that transesterification is faster when catalyzed by alkali.