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Preparing Your Raw Materials

ATTENTION

The system can handle a large variation of both vegetable and animal fats. However, the oil and other reagents must meet certain quality standards to ensure a biodiesel product which meets recognised standards. You are advised to find a reliable source of all of the raw materials required before you try to produce biodiesel.

Remember – waste engine oil or other mineral oil cannot be used as a feedstock.

4.1 Reaction Component Quality

In order to achieve EN14214 standard fuel, it is crucial that all reaction components are of the correct specifications. Feedstock vegetable oil, alcohol, catalyst, and compressed air must all be dry.

In particular, EN14214 standard cannot be guaranteed if the feedstock is waste vegetable oil (WVO) or animal oil. Best results are gained using a reliable, predictable virgin feedstock oil, which must comply with DIN 51605 (see seed oil parameters in section below).

The vegetable oil must remain fluid at 20° C (68°F). If it is solid or very viscous you may experience problems with viscosity of the final biodiesel product. The oil must be filtered to 5 microns or less (1 micron recommended). Do this in stages e.g. 800, 200, 50 then 1 micron filters, with hot oil to decrease its viscosity. Centrifugation in a self-cleaning centrifuge is another option.

The specification of methanol should be technical grade, > 99.85% purity. Up to 2% isopropyl alcohol content is admissible but water is not.

Some users prefer premixed Potassium Methylate as it is pre-dried, whereas mixing methoxide fresh from methanol and potassium hydroxide generates small amounts of water. It should be technical grade with 32% KOCH₃ dissolved in Methanol. The ratio of methylate to methanol will be altered depending on the feedstock FFA levels. Your chemical supplier should advise on this.

Potassium hydroxide or sodium hydroxide should be industrial grade, 99.9% pure, in pearl. Micropearl or flake form. The pearl forms will flow more easily if automated dispensing is used. If the catalyst is less than 99% pure then it may be useable providing the reduced reagent content is taken into consideration. For example if potassium hydroxide is only 90% you will need to use more.

ATTENTION

Do not use catalyst that is damp or has been exposed to the air for extended periods, and do not order more than you will use in a month.

You may also refer to page 2 of the NREL Biodiesel Handling and Use Guidelines.