Guide to FAME Biodiesel

Read our easy to understand guide on FAME biodiesel with lots of information to help you understand more about the alternative to regular white diesel for road vehicles.



FAME (Fatty Acid Methyl Esters) Biodiesel Explained – An Easy Guide

FAME (Fatty Acid Methyl Esters) are acids that are created during the transesterification of vegetable oils and animal fats that create biodiesel.

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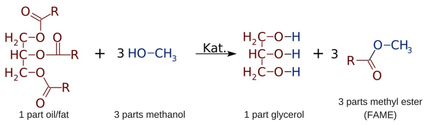
How is FAME diesel created?

FAME (Fatty Acid Methyl Ester) is the generic chemical term for biodiesel derived from renewable sources. It is used to extend or replace mineral diesel and gas oil used to fuel on and off-road vehicles and static engines.

Current pump diesel can contain up to 7% FAME, however, higher levels of FAME content, even up to 100% FAME (B100), are not uncommon.

It's created during the transesterification of vegetable oils and animal fats to make biodiesel. These high molecular weight oils and fats react with short chain alcohol in the presence of a catalyst, usually potassium hydroxide, to produce lower molecular weight esters (FAME).

This diagram illustrates the entire process:



1 part oil/fat | 3 parts methanol | 1 part glycerol | 3 parts methyl ester (FAME)

What is transesterification?

Transesterification involves splitting the three alkoxy groups from the glyceryl backbone of the triglyceride (oil/fat). Reaction with the alcohol produces three lower molecular weight esters (FAME) and liberates glycerol as a by-product. Potassium hydroxide acts as the catalyst in the reaction.

What can FAME biodiesel be produced from?

A wide variety of oils and animal fats can be used to produce FAME fuel. The most commonly used oils and fats include:

- ✓ Used cooking oils
- ✓ Animal fats/tallow
- ✓ Soya Oil
- ✓ Rapeseed oil
- ✓ Sunflower oil
- ✓ Palm oil

How can FAME diesel cause contamination problems?

The methyl esters in biodiesel are hygroscopic. This means that they can absorb considerably more moisture than petroleum-derived diesel and hold this in suspension in the fuel. Petroleum-derived fuels absorb considerably less moisture by comparison and tend to shed water as a separate layer at the bottom of storage tanks.

When water is able to contaminate diesel, it provides conditions suitable for microbial growth and can lead to diesel bugs, moulds, yeasts and bacteria spreading throughout the fuel. FAME is bio-degradable and is an ideal source of nutrients for microbes. If contamination is left untreated, it can damage the fuel permanently.

How can I avoid FAME fuel contamination?

The best way to prevent FAME fuel contamination in your fuel is to get it checked by professionals on a regular basis. An annual test is usually a good idea when it comes to diesel.

While a yearly check by professionals is a good idea, you should check it yourself every few months to see if you can spot any signs of contamination. These usually include:

Issues with your equipment or engine when you have just topped up the fuel
Cracks and signs of erosion on the fuel tank
Visible water droplets in the oil tank

If you spot any of these signs when you are checking your diesel, you should arrange for a fuel cleaning as quickly as possible before it becomes a more serious problem.

Would you like more information about FAME biodiesel? Then give us a quick call on 0330 123 1444 and one of our experts will answer any questions you may have.

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