



Filter Knowledge, Unfiltered

Technical Service Bulletin 07-2

Biodiesel and Fuel Filter Service Intervals

There is a lot of interest in biodiesel, so this TSB will address the benefits, challenges, and myths surrounding this fuel.

Biodiesel is an alternative fuel that is produced from renewable resources. It is derived from either plant or animal oils which are processed to produce biodiesel. Pure biodiesel contains no petroleum, is biodegradable, nontoxic, and is effectively free of sulfur. It is created through a chemical reaction called transesterification. Fatty Acid Methyl Esters and glycerin are two of the products created from this process. Methyl Esters are what we call biodiesel, and glycerin is a commodity which is used by the manufacturers of personal care products.

There seems to be some confusion as to what exactly constitutes biodiesel. A common question asked is if raw vegetable or animal oil is the same as biodiesel. The short answer is no. Biodiesel has been extensively tested for health and performance characteristics and is legally registered with the Environmental Protection Agency (EPA) as a legal motor fuel. Fuel-grade biodiesel must be produced to stringent industry standards (ASTM D6751) to insure proper performance. This cannot be said of raw vegetable oil.

Biodiesel is commonly blended with petroleum diesel. These blends are labeled as BXX. For example, B2 represents a mixture containing 2% Biodiesel and 98% petrodiesel. Biodiesel has attained "mainstream" status in blended formulations ranging from B2 – B20. In most cases, biodiesel in a B20 or lower blend can be used in compression ignition (diesel) engines with little or no modification. Presently there are no recommended uses for blends above B20.

Once seen as the less refined relative of the gasoline engine, the modern diesel boasts technology and complexity that would have been hard to imagine years ago. These advances, in part due to tightening EPA regulations, have created a shifting landscape to which diesel engine manufacturers have had to adapt.

Fuel delivery systems have seen sweeping changes in system pressures and mechanical tolerances. Combine this with diesel fuel that has been stripped of its lubricating properties during the removal of sulfur ([TSB 07-1](#)) so that it meets tough new regulations, there is the potential for greatly accelerated injector wear and premature failure. Laboratory studies have shown conclusively that biodiesel

in concentrations as low as B2 can replace these lost lubricants and reduce the potential for accelerated fuel system wear.

When preparing to convert to a biodiesel blend it is important to be aware that biodiesel has a “solvent” quality that will clean the fuel delivery system. This typically translates to changing fuel filters more often as the system releases accumulated contaminants. The duration of this process depends upon the overall cleanliness of the fuel system. The amount of time the system has been in use, along with the quality of fuel and the level of preventative maintenance the system has seen, are all contributing factors. After this initial clean-up, you can expect a return to normal fuel filter service intervals.

Biodiesel also has different handling characteristics than petrodiesel. It has both a higher cloud and pour point than petrodiesel, which may affect its use in cold climates. Considerable research is being devoted to improving the cold-weather performance of biodiesel. Additionally, biodiesel has 8% less energy in its pure form than petroleum diesel. Both of these factors are effectively negated when it is blended with petrodiesel.

For additional information, contact:

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