BIODIESEL

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BIODIESEL OREGON Facts

Maintenance & Storage Procedures

While biodiesel can be used in diesel engines with little or no modification, it is important to follow certain maintenance procedures to ensure fuel quality and proper equipment performance.

SWITCHING TO B20: RECOMMENDED PROCEDURES

Biodiesel has solvent properties that can dissolve the accumulated sediments in vehicle fuel tanks or bulk storage tanks when the fuel is first introduced. B20, being a 20% blend, has a milder effect than pure biodiesel. Therefore, it is not necessary to clean tanks before switching to B20, although it is good practice to test tanks for water, algae, and other contaminants prior to using the new fuel. B20 is sufficiently diluted so that most problems encountered are minor, but occasionally a fuel filter or dispensing filter may become plugged as the biodiesel loosens old deposits.

Keep some extra filters on hand and consider a new fuel filter with any standard fuel maintenance in the first 60 days after switching to B20. Provide fuel filter changes as needed to ensure optimal fuel flow and engine performance. Other than cold weather gelling, any filter clogging that may occur with B20 typically goes away after the first few tanks of fuel.

B20 is also sufficiently diluted that it is not necessary to change out the older style rubber engine gaskets, seals, or hoses (present before 1995) that would not be compatible with higher biodiesel blends.

SWITCHING TO B99: RECOMMENDED PROCEDURES

Fuel Filters: B99 is likely to dissolve the accumulated sediments in diesel storage and engine fuel tanks, which can lead to plugged fuel and dispensing filters. Before using or storing B99, clean the fuel system, including fuel tanks, where sediments or deposits may be present. Then, be sure to monitor fuel filters and change them as needed until the sediment build-up is eliminated. Previous successful use of B20 does not mean that tanks are without sediment. B20 is too dilute to "clean" tanks and therefore caution is still warranted when switching to B99. Plan and budget for the time and expense of cleaning fuel systems in advance, or for increased fuel filter changes afterwards.

Oil Changes: Some B99 may make its way past the piston rings and into the oil pan. This is due to the slightly higher viscosity and density of biodiesel compared to petroleum diesel. High levels of biodiesel present in the engine oil may polymerize over time and cause some engine oil sludge. This can be remedied with more frequent engine oil changes. Blends of B50 and above might reduce extended drain intervals. Monitor and test engine oil as necessary.

Engine Components: Certain materials are incompatible with B99 and should be replaced. These include natural rubber compounds, polypropylene, polyvinyl, and Tygon materials. Material incompatibility is usually only an issue with engines made before 1995 because, at that time, most original equipment manufacturers made component changes to accommodate the switch to low-sulfur diesel fuel. The new materials used are also compatible with B99. Components that may need to be replaced include hoses, gaskets, seals, and other parts that would have prolonged exposure to B99. Materials that are compatible with B99 include Teflon, Viton, fluorinated plastics, and Nylon. B99 suppliers and equipment vendors should be consulted to determine which components need to be changed out. However, this process is not overly difficult or expensive.

COLD WEATHER MANAGEMENT

Unlike gasoline, both petroleum diesel and biodiesel can gel at cold temperatures. If the fuel begins to gel, it can cause increased stress on fuel pumps and fuel injection systems. It can also clog filters or eventually become too thick to pump from the fuel tank to the engine. B99 gels at a higher temperature than conventional diesel fuel. Most B99 begins to thicken (cloud) at around 35°F. To prevent cold flow issues, some users switch from B99 to a blend of B50 in cold weather (below 35°F). B50 provides adequate dilution to prevent cold weather gelling. Other options for using B99 in cold weather include keeping vehicles in a heated garage, using fuel system heaters, or using winterized biodiesel (biodiesel with cold flow additives).

BIODIESEL STORAGE FOR B99

Many petroleum companies do not recommend storing petroleum diesel for more than six months, and the same holds true for biodiesel blends. Current industry recommendations are for biodiesel to be used within six months or reanalyzed to ensure that fuel continues to meet ASTM D 6751 specifications. Most tanks designed to store diesel fuel will store blends of B20 and above with no problem. However, B99 requires some additional considerations.

Tank Materials: Most tanks designed to store diesel fuel will store blends of B20 and above with no problem. However, B99 requires

Maintenance & Storage Procedures (continued)

some additional considerations. Acceptable storage tank materials include aluminum, steel, fluorinated polyethylene, fluorinated polypropylene, Teflon, and most fiberglass.

Moisture: Keep tanks dry. Moisture is detrimental when combined with any biodiesel product and can ultimately affect both equipment performance and equipment maintenance. Keeping tanks dry also minimizes bacteria and algae growth. Periodic testing is recommended to ensure that microorganisms are not present.

Temperature: B99 should be stored at above 40°F. B99 can be stored underground in most cold climates without additional considerations as underground storage temperatures are normally above 45°F. Above-ground fuel systems should be protected with insulation, agitation, heating systems, or other measures if temperatures regularly fall below the cloud point of the fuel. Make sure that fuel pumps, lines, and dispensers are protected from cold and wind chill with properly approved heating and/or insulating equipment.

Cleanup: Because of its solvency properties, B99 can remove decals and some types of body and engine paint if the fuel is not wiped up immediately. Although biodiesel has a high flash point (300°F), all materials that are used to wipe up biodiesel spills should be considered combustible and should be stored in a safety can.

WHAT ABOUT BLENDS BETWEEN B20 AND B99?

Biodiesel is available in just about any blend, including those between B20 and B99. For blends above B20 the safest course of action is to follow the procedures listed above for B99.

Go to www.biofuels4business.com for information on:

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- Engine performance
- Fleet success stories
- Using B20 and B99 blends
- Fuel quality
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