Distributor Q&A

- How long can biodiesel be stored and what analysis is appropriate to test for the age of biodiesel that has been in storage?

Typical storage time that is recommend is approximately 6 months but can be increased depending on the quality of the storage conditions. Some poor quality tanks will age fuel within weeks and others months. As the fuel ages the methyl esters begin to break apart in a process of oxidation which can lead to high acid numbers, high viscosity and the formation of gums and sediments that can clog filters. If the acid number or the viscosity is out of ASTM D 6751 specification, then the fuel has degraded and may not be used. Decreasing moisture content within the product storage tank along with keeping microbial growth to a minimum will help increase storage life along. Several biodiesel stabilizer additives on the market that will help increase storage times. Other techniques for longer-term storage include replacing the atmosphere within the tank with nitrogen to reduce the presence of oxygen. For backup generators and equipment that sits unused for long periods of time, stabilizers should be added along with draining the fuel tanks and refilling with less oxidized or fresher fuel at regular intervals. Whenever fuel quality is in question, standard industry tests such as acid number are available to determine quality.

- Can biodiesel be splash blended or is there specific blending equipment required?

Splash blending is never recommended for percentage blending (first adding diesel and then adding biodiesel) into either storage tanks or vehicle tanks. Splash blending using a standard procedure into a Transport Truck can achieve sufficient blending prior to delivery. This is often called Transport Truck Blending. The vehicle must be clean and have transported only biodiesel or diesel prior. First the biodiesel is added at the desired percentage and then diesel is injected from the bottom to fill the remaining portion of the truck. Equal blend percentages must be maintained in each tank of the truck. This process works well and requires specific blend and volume calculations, which provides a written record of the volumes.

Rack blending equipment can provide specific blending percentages at a constant flow rate. It is recommend that if significant volume of blending is expected, than this equipment may be reasonable. There are several technology companies that offer blending equipment and at higher volumes, this type of blending can be economical.

- Does blending work in cold climates?

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In cold climates several precautions need to be taken to achieve a homogenous single phase blend of the biodiesel and diesel. It is common for cold biodiesel to be added into a cold transport truck where the biodiesel can flash freeze which leads to wax crystal formation. These crystals do not easily re-melt into the product and remain in the fuel, which can lead to clogged filters. In general, if the biodiesel temperature is kept10 degrees F above the cloud point of the fuel then it is possible to successfully blend with diesel in cold temperatures. When adding this fuel into a cold transport truck some blenders heat the biodiesel up to 100 degrees F to maintain 10 degrees F above cloud point during the initial phase of the transport truck blending. For in-line blending, biodiesel temperatures also must be help 10 degrees F above the could point.

- What is BQ9000 and what does if cover?

BQ9000 is a quality assurance program for businesses engaged in production, distribution and sale of biodiesel and/or biodiesel blends of B2 or greater. The program promotes the commercial success and public acceptance of biodiesel by helping to assure that biodiesel made and sold is kept at the industry standard ASTM D 6751. The program entails the creation of a Quality Manual that details the step-by-step processes that ensures the quality of the fuel is maintained. Having this certification or a program equivilant to this, helps with the marketing of the fuel by providing adequate safe guards to provide on spec fuel. www.bq-9000.org has additional details on the program parameters.

- What are the most important items to do when distributing biodiesel?

First, problem free performance depends on the quality of the fuel. High quality fuel must be purchased from producers and samples should be taken to verify this. Second, it is recommended that the handling and storage process that are in place at your site mirror that of a high quality diesel program; no water or microbial activity within the storage tanks along with adequate testing protocols. Third, a written quality program should be developed to assist in determining adequate levels of quality protection built into every fuel handing activities. This will provide you the necessary tools to assure customers the integrity of the product that they are getting.

- Are there any storage tank considerations?

The most important consideration is being able to drain the bottom of the tank on a regular basis. This will remove water and sediment that can accumulate within the tank that can significantly impact fuel quality. Locate UST in cool, shaded areas if possible to reduce exposure to high temperatures and reduce the tank atmospheric temperature changes which can increase the amount of water in the fuel tank.

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- Are there any piping considerations?

Storage tank materials that are recommended include aluminum, steel, fluorinated polyethylene, fluorinated polypropylene, Teflon and most fiberglass. Yellow metals such as bronze, brass, lead, zinc, copper tin can accelerate the oxidation of the biodiesel and should be strictly avoided.

- Why is the quality of biodiesel important?

For biodiesel to run successfully, the minimum quality requirements of ASTM D 6751 must be achieved. Biodiesel is a more sensitive fuel than diesel and is susceptible to degradation in the presence of water and microbial activity, which can quickly take the biodiesel out of spec. Biodiesel is also more temperate dependant that diesel and can cause operationally problems if adequate measures are not taken during cold weather. Additionally biodiesel demand is high and producers are not driven by market forces to create the highest quality product. Biodiesel is also sold through a different infrastructure than regular petroleum products. At this time biodiesel is transported primarily by rail and tank truck. This can increase problems of cold weather and increase the potential for cross contamination of product. Biodiesel quality is also highly dependant on the oil feedstock used along with which production technology is used and how it is operated. Biodiesel physical properties are rarely static.

- When mixing biodiesel into dyed fuel, does it change the federal dye concentration specification?

The IRS is clear that all non-taxed diesel and kerosene is to be dyed with dye solvent red 164 and no other dye is approved. The concentration required for the red dye is approximately 3.9 pounds of solid dye per thousand gallons. Unfortunately there is little information on how biodiesel effects dye concentrations. The best bet is to dye any clear product at the time of mixing and hold to the dye concentrations as approved by the commissioner. The information is provided in IRS regulations (26 CFR 48.4082-1)