



SOYGOLD[™] BIOFUEL

November 1, 2008

Handling and Mixing Guidelines for Pure Biodiesel and Petroleum Diesel Fuel Blends

Note Biodiesel from soybean oil, SOYGOLD diesel and Soy Diesel are typically the same product.*

Like any diesel fuel, biodiesel can gel at temperatures below freezing. The following guidelines should be followed when handling and storing biodiesel fuel during cold weather.

1. Storage and Use of Pure Biodiesel

- a. Pure biodiesel should be stored at temperatures above 45°F to assure no gelling or cloud occurs. Below 45°F, some of the fatty components of biodiesel can begin to solidify and drop out of solution. When this occurs, as with gelled diesel fuel, filters and fuel lines can become clogged. The crystallization onset temperature is 39.7°F.
- b. Use of pure biodiesel, that is biodiesel not blended with petro diesel, has some special requirements. Biodiesel fuel has solvency characteristics. Biodiesel will dissolve petro diesel fuel residues and gummy deposits from fuel tanks and fuel lines over time and deposit these residues in the vehicle fuel filter. If these residues are sufficient in quantity to clog the filter, filter replacement will be required. Certain elastomers used in hoses and seals in the fueling system may be swelled by prolonged contact with pure biodiesel fuel, however many of these components are fluorinated or made from viton or teflon type elastomers and will not be affected by contact with pure biodiesel.

2. Splash Blending

Since biodiesel fuel is slightly heavier than petro diesel, it is best to add the biodiesel on top of the petro diesel for splash blending. Ideally, the blend should be agitated or recirculated in the tank.

3. Blending Temperatures

Blending biodiesel with petro diesel that has chilled to a temperature below 45°F can cause solids to form in the blend, due to the lower temperature of the petro diesel fuel. If solids begin to form due to blending at lower temperatures, the fuel must be heated above 90°F to cause solids to go completely back into solution. Biodiesel fuel ideally should be blended with petroleum diesel at temperatures above 45°F.

4. Cold Temperature Operation

Biodiesel and petro diesel fuel blends of 20% or more biodiesel require special precautions in severely cold weather. The blends need to be tested for gel temperature similar to #2 diesel fuel. Commercially available anti-gel additives are effective on blended fuels but should be tested for gel point.

5. Blending 20% in Normal Conditions

Biodiesel and #1 petro diesel blends, when blended above 45°F, show excellent anti-gel characteristics. Pure biodiesel should be at a minimum of 45°F and the fuel oil, either #1 or #2, should be at a minimum of 45°F prior to blending. Biodiesel blends of 50% biodiesel and 50% #1 diesel (kerosene) will typically lower the gel temperature to 0°F.

6. Blending 20% in Cold Conditions

If it becomes necessary, blends can be made successfully at below 45°F provided the following procedure is followed. It is recommended that pure (100%) biodiesel be mixed 50% by volume with #1 diesel fuel (kerosene) at temperatures above 45°F before attempting to blend the biodiesel with a colder diesel fuel to prevent sudden chilling and gelling of the biodiesel.