



Summary of Key Points for Blending

- 1. Biodiesel is heavier than diesel fuel.** Biodiesel has a density of 0.88 compared to seasonal diesel at 0.85 and No. 1 diesel at 0.82. Therefore, it is recommended that **the generic distillate fuel—diesel fuel, kerosene or heating oil—be in the tank prior to introducing the biodiesel portion. When splash blending, biodiesel should be blended on top of petroleum diesel.**
- 2. Biodiesel has a higher pour point—relative to petroleum diesels.** Depending on the outside temperature, to ensure flow, it may be necessary to **heat the biodiesel**, and possibly petroleum diesel, prior to the introduction to the generic distillate portion of the blend.
- 3. Blends will not separate in the presence of water.** However, execute proactive tank management to prevent other problems caused by free water.
- 4. Only use fuels that meet CGSB specifications,** CAN/CGSB-3.520 Biodiesel B1-B5 Standard for Biodiesel and CAN/CGSB 3.517 for Automotive Low Sulphur Diesel Fuel for generic diesel. Absolutely do not blend fuels that do not meet these specifications.
- 5. Blend the biodiesel with 50% No.1 or Type A diesel fuel prior to introducing it into your final fuel mixture.** Make sure that your No. 1 or Type A diesel fuel is above 10°C.
- 6. Absolutely know the cloud point and the pour point of your generic diesel fuel product prior to blending** it into the biodiesel. This will tell you what the inclusion of your specified blend of biodiesel will do to these key winter operability characteristics post-blending. If you start with the wrong fuel for the seasonal low temperature operability weather specifications, you will end up with an inferior biodiesel blended fuel.
- 7. Seek blending speeds either through gravity distribution or mechanical agitation at least 273 LPM/75 GPM to full rack velocity, which can be as high as 2364 LPM/650 GPM.** Hand mixing—basic pouring of one fuel into another—is not suggested in cold climates. An alternative approach to blending would be product mixing during delivery. Once the truck has been loaded at a bulk terminal, your products are mixed en



route to its final destination. Once at the destination, pumps or gravity, drop the mixed products into the end user's fuel storage tanks. Success has been achieved using this blend strategy.

8. **Neat biodiesel should not be kept on a truck overnight prior to delivery.**
9. **Many fuel users and distributors currently use cold winter diesel fuel additives to improve winter handling characteristics of diesel fuel.** To date, no commercial diesel fuel additive has been found to be effective in modifying the cold weather specifications of neat biodiesel. However, commercial additives are available to treat the generic distillate portion of the blend. These commercial additives can aid in reducing the cold weather characteristics of the fuels cloud point and pour point, which in turn, will benefit the biodiesel blend by working solely on the distillate fuel characteristics. As a general rule of thumb, the lower the cloud point of your distillate fuels the better the biodiesel blend will be.
10. When using cold weather distillate additives, **it is imperative that they be added to your fuel before the fuel reaches its cloud point.** Also, make sure that the additive gets into the fuel when agitation is available through your chosen blending strategy. Similar to biodiesel blending, an additive requires equal blending attention so that it gets distributed evenly throughout your entire tank and ensures optimum winter performance characteristics.
11. Become acquainted with a **local fuel testing laboratory in your region** before you have a problem.
12. **Test for water in all tanks storing biodiesel, conventional diesel fuel, and blends of both fuels** by using the tried and true method of a gauge stick and water-finding paste, (available at petroleum supply houses).
13. Whenever possible, **industry recommendations suggest that 30-micron filters be used on filters utilized for fuel pumping islands.** Winter conditions frequently cause fuel to haze when fuels reach posted cloud points because well-entrained moisture tends to freeze causing premature filter plugging.
14. **Water-fuel separators need to be checked** at the same time vehicles are being fueled and must be serviced as often as necessary.