



SOY BIODIESEL FACT SHEET

Fact sheet provided by Ohio soybean farmers and their checkoff.

COLD WEATHER GUIDELINES

Ensuring optimum performance of B2, B5, B10 and B20 biodiesel blends throughout the cold weather season.

The cold flow properties of all diesel fuel --petrodiesel and soy biodiesel-- call for special care and precautions in cold weather climates. Therefore, we encourage you to be familiar with the background information and winterizing tips provided here as you prepare to use soy biodiesel blends in your diesel engines during the winter months.

Additionally it is important to know the cold weather properties of both soy biodiesel and petrodiesel.

Start With High Standards for Quality

When selecting soy biodiesel for cold weather use, an important factor in ensuring quality and performance is to verify that your producers and marketers of soy biodiesel meet ASTM D-6751 standards, are BQ-9000 certified and provide a certificate of analysis for each load delivered.

Studies show the importance of starting with the best base stock available, coupled with an appropriate blend of kerosene and fuel additive to secure the lowest operating temperature of soy biodiesel blended fuels. Remember, working with a qualified soy biodiesel provider assures you of top quality fuel and performance, all year round.

Defining Low Temperature Characteristics

Winter performance of diesel fuel is often associated with the term "cold flow." The cold flow characteristics of diesel fuel in colder temperatures are measured in three areas:

Cloud Point - The temperature at which small solid crystals, or wax, become visible as the fuel temperature cools.

Pour Point - The lowest temperature at which fuel will continue to flow.

Cold Filter Plugging Point (CFPP) - The temperature at which fuel components begin to crystallize or gel, causing fuel filters to plug.

The test methods used to define the characteristics specified above are generally accurate to plus or minus 3° to 5° F. It is important to take into consideration these test variables and factor them into your cold flow development efforts in the field.

Soy Biodiesel Cold Flow Properties

Whether you choose B2, B5, B10 or B20, the different soy biodiesel blends have different cold flow thresholds. While winter tests of higher blends, such as B20 and B100, successfully confirm the winter operability of soy biodiesel, research shows the following cold weather characteristics among soy biodiesel blends:

- B2** Does not measurably impact cold weather performance. With B2 or higher blends, cold weather operability depends primarily on the type of petrodiesel used.
- B5** Differences are minor. During winter, B5 can be handled just like No. 2 winterized petrodiesel.
- B10** Even at a B10 blend, the cold flow properties of soy biodiesel are barely distinguishable from the diesel fuel in which it's blended.
- B20** Winterizing requires extra precautions. Untreated B20 freezes about 3°-10° F higher than petrodiesel. This range varies depending on the cold flow properties of both the soy biodiesel and the petrodiesel.
- B100** Non-blended soy biodiesel freezes faster than most petrodiesel. Tanks, pipes and pumps should be heated to keep B100 fuel above 50° F. Transport in insulated tankers from November 1 to March 1.

Key Winterizing Points

It's important to remember that soy biodiesel has many of the same properties as petrodiesel. So, the same winter precautions taken with petrodiesel can be used to help ensure trouble-free operations with soy biodiesel. A variety of traditional cold weather solutions for diesel have been shown to work just as well with soy biodiesel.

To help address cold weather performance with diesel fuel and soy biodiesel-blended fuels, remember these points:

- * **Know what your base diesel fuel cold weather specifications are: Cloud Point, Pour Point and Cold Filter Plugging Point.**
- * **Store all soy biodiesel blends at 5° -10° F above their cloud point.**
- * **Ask your fuel suppliers for cold weather specifications at all times.**
- * **Take precautions such as blending with kerosene.**
- * **Secure the lowest operating temperature of your generic fuel portion prior to introducing your soy biodiesel component.**
- * **Ask your additive supplier to provide performance data. Suppliers should verify effectiveness through field samples.**
- * **Treat with additives before your fuel reaches its cloud point, and blend or agitate properly.**
- * **Make sure the additive you select meets the 15-ppm sulfur rule.**
- * **Recognize that commercially available fuel additives touted for soy biodiesel blends work on the petro diesel portion only.**
- * **Use of moisture suppressants help to eliminate water and condensation buildup, which prevents ice crystal formation.**
- * **Store vehicles in or near a building when not in use.**
- * **Always maintain B100 soy biodiesel at 50° – 60° F prior to blending with diesel fuel.**
- * **Utilize fuel tank, fuel filter or fuel line heaters.**
- * **Plan ahead in order to meet your cold weather performance targets before winter sets in.**

TERMINAL COMPANIES

For terminal companies storing soy biodiesel in its neat form, cold weather calls for the heating of tanks, piping and delivery equipment to accommodate the pour point of soy biodiesel. Keep soy biodiesel heated to 50° – 60° F until it is properly blended into the distillate product.

DOWNSTREAM

For the downstream, cold weather means it is imperative that selection of the absolutely lowest operating temperature of your diesel fuel be adhered to prior to accepting blends of soy biodiesel. On average, a 20-percent blend of soy biodiesel will impact the finished fuel cold weather operational temperatures by 2° – 10° F. Keep that compromise in mind when sourcing your base diesel fuel. B20 has enjoyed a successful track record nationwide when these guidelines are followed.



Ohio Soybean Council

Soy biodiesel is available statewide. To find a distributor or retailer near you visit soybiodiesel.org