BIODIESEL
a better choice for children, and for buses

Your business is getting children to school to learn. We urge you to learn here about a way to get them to school in a more environmentally friendly, energy secure way that also benefits your buses’ engines – by using biodiesel blends. The most common, B20, is a blend of 20 percent pure biodiesel and 80 percent conventional diesel.

School buses are one of the largest mass transit fleets in the United States, but moreover transport our most precious commodity daily. Every school day, some 440,000 yellow school buses transport more than 24 million children to and from schools and school-related activities. The vast majority of school buses are powered by diesel engines.

Pollution has health implications for everyone, especially children. The use of B20 – and lower blends - can reduce that threat. Because B20 works in any diesel engine with no modifications, B20 offers schools a transparent, cost-competitive option for an immediate solution to air quality concerns. As a result, several thousand school buses in the US are running on blends of biodiesel and reporting success.

B20 offers similar power to diesel fuel. One of the major advantages of B20 is the fact that it can be used in existing engines and fuel injection equipment with little impact to operating performance.

WHAT IS BIODIESEL?

Biodiesel is a domestic, renewable fuel for diesel engines derived from natural oils like soybean oil, which meets the stringent specifications of ASTM D 6751. Biodiesel can be made from a variety of vegetable oils or animal fats. In its pure form, biodiesel is designated B100. It’s important to know that raw vegetable oils and cooking oils are NOT biodiesel and could harm your engine, so be sure to only use biodiesel meeting D 6751.

A Biodiesel blend is a blend of biodiesel fuel meeting ASTM D 6751 with petroleum-based diesel fuel, designated BXX, where XX represents the volume percentage of biodiesel fuel in the blend.

WHAT SCHOOL FleETS Are USING BIODIESEL BLENDs?

Hundreds of US school fleets are running on B20 to B2; here are examples:

The Medford School District has used a blend of 20 percent biodiesel and 80 percent petroleum in half of its 40 school buses since 1997. “It’s been absolutely fantastic,” said Joe Biluck, Jr., director of operations and technology for the district. “We’ve had no down time as a result of this fuel. We’ve seen no drop in miles per gallon, which means the engines aren’t working any harder.”

St. Johns Public Schools was the first Michigan school district to switch its entire bus fleet over to B20 (20 percent biodiesel/80 percent diesel). Wayne Hettler, Garage Foreman & Head Mechanic, tracked statistics like the time the buses idle, the miles per hour they drive, oil analysis, and the mileage the buses get. He noticed a cost savings on the extended intervals between oil changes. He noted his Internationals and Mercedez went 12,000-15,000 miles between oil changes and the Cummins about 8,000-10,000. His GM and Mitsubishi vehicles continued to get oil changes on a regular basis as they were the service vehicles and didn’t generate a lot of miles over a long time.

WHAT PERFORMANCE CAN I EXPECT?

B20 and lower blends can help fulfill environmental and energy security needs without sacrificing operating performance.

Horsepower, Fuel Economy, Range and Carrying Capacity
- In more than 50 million on-road miles and countless off-road applications, B20 shows similar fuel consumption, horsepower, range, and carrying capacity as conventional diesel fuel. Pure biodiesel has much higher cetane number than most US based petrodiesel. With the higher cetane of a B20 blend, users experience better starting, smoother operation, and a quieter operation than petrodiesel alone.

Lubricity Improvements
- Starting in 2006, all on-road diesel fuel had to have 15 parts per million (ppm) sulfur or less. When refiners remove sulfur, they also remove the component of the fuel that imparts fuel lubricity. Almost all of the ULSD today contains a lubricity additive to counteract the negative impact of removing sulfur. Biodiesel has a significant amount of natural lubricity, and adding biodiesel in levels as low as 1% can improve lubricity up to 65%. With blends like B5 or B20, there is no need to add lubricity additives.

Safety and Storage
- Biodiesel is much safer than petrodiesel with a flash point of over 200 degrees versus about 125 degrees Fahrenheit for regular No. 2 diesel. Adding biodiesel to diesel fuel increases the flash point, making is safer than diesel fuel alone. Like all fuels, biodiesel blends have a shelf life. The National Biodiesel Board recommends biodiesel blends be used within 6 months.
COMPATIBILITY OF B20 WITH ENGINE COMPONENTS

B20 has been used in a variety of engines and equipment for many years without issues related to materials compatibility. Impacts of higher blends of biodiesel than B20 have not been well studied, which is a factor why B20 and lower blends are recommended as a drop-in replacement for petrodiesel. While it may not be recommended, if a user does wish to use blends higher than B20, there may be adverse impacts on hoses and gaskets on older engines, as well as other precautions to take into account. See the NBB web site for further details at www.biodiesel.org, then “Fact Sheets.”

BIO DIESEL IN COLD WEATHER

Cold weather can gel any diesel fuel, including biodiesel. Users of B20 will usually experience an increase of the cold flow properties (cold filter plugging point, cloud point, pour point) of approximately 2 to 10° Fahrenheit. Precautions employed for petrodiesel fuel are needed for fueling with 20 percent blends.

Your fuel supplier should be familiar with these precautions and deliver a biodiesel blend that will work for your climate and time of year—just as they do with petrodiesel. B20 blends from quality suppliers have been used in the frigid weather in Minnesota, Iowa, and Michigan for years with no cold weather problems. Visit www.biodiesel.org/cold for more.

THE BIODIESEL STANDARD (ASTM D 6751)

ASTM fuel standards are the minimum accepted values for properties of the fuel to provide adequate customer satisfaction and protection. Meeting the biodiesel standard ASTM D 6751 prior to blending helps ensure the biodiesel blend you receive will perform well in your engines.

Purchase fuel only from a reputable source, such as companies that are certified under the BQ-9000 biodiesel quality program. You can be confident that a company who has gone through the rigorous audit and qualifications of the BQ-9000 program will supply biodiesel meeting ASTM D 6751.

ENGINE WARRANTIES

Most major engine companies have stated formally that the use of blends up to B20 will not void their parts and workmanship warranties. However, some engine makers only recommend the use of up to B5 and some fully support the use of B100. If there are engine problems caused by a fuel—whether that fuel is petrodiesel fuel or a biodiesel blend—these problems are not related to the materials or workmanship of the engine and are therefore the responsibility of the fuel supplier and not the engine manufacturer.

FUEL FILTERS AND CLEANSING EFFECTS

Biodiesel has excellent cleansing properties. In some cases the use of petrodiesel, especially No. 2 petrodiesel, leaves a deposit in the bottom of fuel lines, tanks, and delivery systems over time. The use of biodiesel can dissolve this sediment and result in the need to change filters more frequently when first using biodiesel until the whole system has been cleansed of the deposits.

The impacts of this cleansing effect are less with biodiesel blends like B20, as users indicate initial filter clogging due to this cleaning effect with B20 in only about 2% of the engines. When first starting with a blend like B20, be sure to monitor your fuel filters and have an extra fuel filter on hand just in case.

BIODIESEL USAGE CHECKLIST

- Ensure your fuel supplier buys only biodiesel meeting the ASTM specification for pure biodiesel (ASTM D 6751) before blending with petrodiesel.
- Check fuel filters on the vehicles and in the delivery system frequently upon initial biodiesel use, and change them as necessary.
- Be aware of biodiesel’s cold weather properties and make sure your fuel supplier has taken appropriate precautions in cold weather.
- Use biodiesel blends within six months.

HELPFUL LINKS

- Fleet Managers’ Guide: biodiesel.org/buyingbiodiesel/guide/guide_fleetmanagers.shtm
- Fuel Fact Sheet: biodiesel.org/pdf_files/fuelfactsheets/bdusage.PDF
- OEM Warranties: biodiesel.org/resources/fuelfactsheets/standards_and_warranties.shtm
- BQ-9000 Quality Assurance Program and Participating Companies: bq-9000.org/
- NREL Storage and Handling Guidelines: nrel.gov/vehiclesandfuels/npf/bpdfs/40555.pdf