

Biodiesel Fact Sheet

What is biodiesel?

Biodiesel is a naturally oxygenated fuel produced from organic feed sources such as soybeans, cooking oil, and animal fats. Biodiesel can be used in its pure form (B100) or blended at any ratio with petroleum diesel to achieve cost efficiency and improve cold weather performance. It is commonly used as B20 - a blend of 20% biodiesel and 80% petroleum diesel. In 2001, ASTM (www.astm.org) approved the full standard for biodiesel, with the new designation of D-6751. This standard covers pure biodiesel (B100) and any blends up to B20. To ensure fuel quality, an accreditation program called BQ-9000 (www.bq-9000.org) helps companies improve their fuel testing and greatly reduce any chance of producing or distributing inadequate fuel.

What types of vehicles can use biodiesel?

Biodiesel can be used in any newer diesel vehicle without modification. Vehicles produced prior to 1993 should have rubber seals in fuel pumps and fuel systems replaced with non-rubber (Viton) seals. Biodiesel acts as a solvent and can loosen sediment built up in the fuel tank over year of petroleum diesel use. Fuel filters should be monitored and possibly replaced shortly after transitioning to biodiesel. With high blends of biodiesel a complete system cleaning is recommended. Biodiesel is used extensively in parts of Europe and is rapidly gaining support in the United States. Applications include buses, delivery trucks, waste disposal and recycling trucks, construction and farm equipment, heavy-duty freight hauling, boats and passenger vehicles. Biodiesel may also be utilized in stationary applications such as diesel generators and boilers.

How does biodiesel perform?

Biodiesel performs like traditional diesel, though B100 may result in a minimal power loss at the high end and a slight reduction in fuel economy. B20 users generally experience no marked difference in fuel economy from petroleum diesel. Because biodiesel acts as a lubricant, it reduces wear and tear on the engine, reducing maintenance costs and extending engine life. Biodiesel remains blended with petroleum diesel so it can be easily stored and dispensed in existing facilities. Biodiesel is different from petroleum diesel and distributors should review the DOE's Biodiesel Handling and Use Guidelines (www.nrel.gov/vehiclesandfuels/npbf/pdfs/40555.pdf), and keep in mind the following issues:

- Biodiesel thickens more in cold weather and special considerations or modifications are required for B100.
- Biodiesel, in higher blends, is not compatible with certain types of rubber compounds, some metals, and plastics.
- Load diesel fuel first and add biodiesel at a similar temperature to properly splash blend in a fuel delivery vehicle.

Where can I get biodiesel?

North Carolina has many public biodiesel service stations that sell B20 or B10 throughout the state with more being planned or installed that will be operational soon. The most current list of stations can be found on the "North Carolina Biofuel Retail Locations" under facts www.ncmobilecare.org or through an interactive map at www.4cleanfu A few local biodiesel co-ops operate in North Carolina where members can get B99 blends. State agencies, local governments, and educational institutions can get B20 at many of the DOT sites around the state or they may also purchase B20 through the state purchasing contract (www.doa.state.nc.us/PandC/fuelcost.htm).



Will running on biodiesel void my warranty?

NO. Federal law, called the Magnuson Moss Act, prohibits the voiding of an OEM warranty just because an aftermarket additive - or biodiesel - was used. Vehicle warranties cover any problems with engine parts or engine operation due to error in manufacturing or assembly regardless of what fuel is being used. Therefore if an engine or vehicle using biodiesel experiences a failure *unrelated* to the biodiesel use, it must be covered by the OEM's warranty. Most major engine companies have stated formally that the use of blends up to B20 will not void their parts and workmanship warranties. Several statements from engine manufacturers are available on the NBB website www.biodiesel.org/resources/fuelsheets/standards_and_warranties.shtm.

What are the benefits of using biodiesel?

For every 1 unit of fossil fuel energy that goes into producing biodiesel, 3.2 units of energy are produced, a 1:3.2 energy balance ratio. Biodiesel also results in significantly lower emissions of particulate matter, carbon monoxide, toxic contaminants, sulfur dioxide, hydrocarbons, visible smoke and noxious odors than petroleum diesel. Biodiesel, depending on the feed source, can result in a 78% reduction in carbon dioxide emissions over its entire production.

Emissions reductions achieved by biodiesel as compared to petroleum diesel

Source: www.epa.gov/otaq/models/biodsl.htm

Blend	Carbon Monoxide	Hydrocarbons	Particulates	Sulfates	Nitrogen Oxide	Air Toxics
B100	47%	67%	48%	100%	+ 9%	60-90%
B20	12%	20%	12%	20%	+ 2% (- 10%^)	20%

^A 2005 NCDOT study found a decrease in NO with B20 in on-road testing of dump trucks

Biodiesel is non-toxic and biodegradable and therefore does not pose a threat to water and soil resources if B100 is spilled. Producing biodiesel from restaurant oil or animal processing wastes reduces the amount of materials overcrowding landfills. Additionally, biodiesel is one of the safest fuels to use, handle, and store because it does not produce combustible vapors and has a flash point that is twice that of petroleum diesel. Significant benefits of biodiesel include reducing dependence on foreign oil and providing alternative markets for farmers. Low blends of biodiesel are highly effective at enhancing the lubricity of diesel fuel. The typical blend used for lubricity enhancement is 2% biodiesel mixed with 98% diesel (B2).

What is the difference between running on Biodiesel and Straight Vegetable Oil (SVO)?

Biodiesel is created from plant or animal oils and fats by a process call transesterification, and can be used in a diesel vehicle without any changes. SVO requires minimal fuel processing, but significant modification must be performed with the engine. A single-tank SVO system comes with replacement injectors and glow plugs optimized for vegetable-oil, as well as fuel heating. A two-tank SVO system starts the engine on ordinary diesel in one tank, switches to SVO in the other tank when the vegetable-oil is hot enough, and then switches back to diesel before the engine stops, so as not to choke up the injectors.

Distributors: complete listings and contact information available at www.ncsoy.org:

Resources:

National Biodiesel Board www.biodiesel.org
Alternative Fuels Data Center www.eere.energy.gov/afdc/altfuel/biodiesel.html
NC Solar Center www.ncsc.ncsu.edu
Triangle Clean Cities Coalition www.triangletcleancities.org
Centralina Clean Fuels Coalition www.4cleanfuels.com
Land-of-Sky Clean Vehicle Coalition www.landofsky.org/planning/p_cvc_home.html

For more information contact:
Jason Wager - Centralina CFC
jwager@centralina.org
or
Anne Tazewell-NC Solar Center
anne_tazewell@ncsu.edu

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