

Biodiesel

Cleaner-burning, American-made fuel



Commonly Asked Questions

What is biodiesel?

Biodiesel is the name of a clean burning alternative fuel produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

Is biodiesel used as a pure fuel or is it blended with petroleum diesel?

Biodiesel can be used as a pure fuel or blended with petroleum in any percentage. B20 (a blend of 20 percent biodiesel with 80 percent petroleum diesel) has demonstrated significant environmental benefits with a minimum increase in cost for fleet operations and other consumers.

Is it approved for use in the U.S.?

Biodiesel is registered as a fuel and fuel additive with the Environmental Protection Agency (EPA) and meets clean diesel standards established by the California Air Resources Board (CARB). Neat (100 percent) biodiesel has been designated as an alternative fuel by the Department of Energy (DOE) and the U.S. Department of Transportation (DOT).

How do biodiesel emissions compare to petroleum diesel?

Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the Clean Air Act. The use of biodiesel in a conventional diesel engine results in a substantial reduction of unburned hydrocarbons, carbon monoxide, and particulate matter compared to emissions from diesel fuel. In addition, the exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from biodiesel are essentially eliminated compared to diesel. Of the major exhaust pollutants, both unburned hydrocarbons and nitrogen oxides are ozone or smog forming precursors. The use of biodiesel results in a substantial reduction of unburned hydrocarbons. Emissions of nitrogen oxides are either slightly reduced or slightly increased depending on the duty cycle of the engine and testing methods used. Based on engine testing, using the most stringent emissions testing protocols required by EPA for certification of fuels or fuel additives in the U.S., the overall ozone (smog) forming potential of the hydrocarbon exhaust emissions from biodiesel is nearly 50 percent less than that measured for diesel fuel.

Does biodiesel take more energy to make than it gives back?

No. Biodiesel actually has the highest "energy balance" of any transportation fuel. The DOE/USDA lifecycle analysis shows for every unit of fossil energy it takes to make biodiesel, 3.2 units of energy are gained. This takes into account the planting, harvesting, fuel production and fuel transportation to the end user.

Where can I purchase biodiesel?

Biodiesel is available anywhere in the U.S. The National Biodiesel Board (NBB) maintains a list of registered fuel suppliers as well as petroleum distributors and retail fueling sites. A current list is available on the biodiesel web site at www.biodiesel.org.

Is biodiesel better for human health than petroleum diesel?

Scientific research confirms that biodiesel exhaust has a less harmful impact on human health than petroleum diesel fuel. Pure biodiesel emissions have decreased levels of polycyclic aromatic hydrocarbons (PAH) and nitrited PAH compounds that have been identified as potential cancer causing compounds. Also, particulate matter, an emission linked to asthma and other diseases, is reduced by about 47 percent, and carbon monoxide, a poisonous gas, is reduced by about 48 percent.

Does biodiesel cost more than other alternative fuels?

A federal tax incentive is expected to help lower the cost of biodiesel blends in both taxable and tax exempt markets. Additionally, when reviewing the high costs associated with other alternative fuel systems, many fleet managers determine biodiesel is their least-cost-strategy to comply with state and federal regulations. Use of biodiesel does not require major engine modifications. That means operators keep their same fleets, spare parts inventories, refueling stations and skilled mechanics.

Do I need special storage facilities?

In general, the standard storage and handling procedures used for petroleum diesel can be used for biodiesel. The fuel should be stored in a clean, dry, dark environment. Acceptable storage tank materials include aluminum, steel, fluorinated polyethylene, fluorinated polypropylene and teflon. Copper, brass, lead, tin, and zinc should be avoided. The DOE Biodiesel Handling/Use Guidelines can be found at www.biodiesel.org.

Can I use biodiesel in my existing diesel engine?

Biodiesel works in any diesel engine with few or no modifications to the engine or the fuel system. Biodiesel has a solvent effect that may release deposits accumulated on tank walls and pipes from previous diesel fuel usage. The release of deposits may end up in fuel filters initially, so fuel filters should be checked more frequently at first. Ensure that only fuel meeting the biodiesel specification (D 6751) is used.

Is biodiesel an experimental fuel?

Biodiesel is one of the most thoroughly tested alternative fuels on the market. A number of independent studies have been completed with the results showing biodiesel performs similar to petroleum diesel while benefiting the environment and human health compared to diesel. That research includes studies performed by the U.S. Department of Energy, the U.S. Department of Agriculture, Stanadyne Automotive Corp. (the largest diesel fuel injection equipment manufacturer in the U.S.), Lovelace Respiratory Research Institute, and Southwest Research Institute. Biodiesel is the first and only alternative fuel to have completed the rigorous Health Effects testing requirements of the Clean Air Act. Biodiesel has been proven to perform similarly to diesel in more 50 million successful road miles in virtually all types of diesel engines, countless off-road miles and countless marine hours. Currently more than 300 major fleets use the fuel.

Does biodiesel perform as well as diesel?

One of the major advantages of biodiesel is the fact that it can be used in existing engines and fuel injection equipment with little impact to operating performance. Biodiesel has a higher cetane number than U.S. diesel fuel. In more than 50 million miles of in-field demonstrations, B20 showed similar fuel consumption, horsepower, torque, and haulage rates as conventional diesel fuel. Biodiesel also has superior lubricity and it has the highest BTU content of any alternative fuel (falling in the range between #1 and #2 diesel fuel).

Does biodiesel perform well in cold weather?

Biodiesel will gel in very cold temperatures, just as the common #2 diesel does. Although pure biodiesel has a higher cloud point than #2 diesel fuel, typical blends of 20% biodiesel are managed with the same fuel management techniques as #2 diesel. Blends of 5% biodiesel and less have virtually no impact on cold flow.

Does biodiesel causes filters to plug?

Biodiesel can be operated in any diesel engine with little or no modification to the engine or the fuel system. Pure biodiesel (B100) has a solvent effect, which may release deposits accumulated on tank walls and pipes from previous diesel fuel use. With high blends of biodiesel, the release of deposits may clog filters initially and precautions should be taken to replace fuel filters until the petroleum build-up is eliminated. This issue is less prevalent with B20 blends, and there is no evidence that lower-blend levels such as B2 have caused filters to plug.

How does biodiesel compare to petroleum diesel in price?

Like petroleum products, biodiesel fluctuates in price. As a general rule of thumb, biodiesel is priced comparably to petro diesel. A B20 blend, as a rule thumb, usually runs around 5 cents a gallon higher than petroleum diesel. In return for the nickel investment, consumers receive greater cetane, greater lubricity, and reduced emissions.

Will biodiesel cause degradation of engine gaskets and seals?

The recent switch to low-sulfur diesel fuel has caused most Original Equipment Manufacturers (OEMs) to switch to components that are also suitable for use with biodiesel. In general, biodiesel used in pure form can soften and degrade certain types of elastomers and natural rubber compounds over time. Using high percent blends can impact fuel system components (primarily fuel hoses and fuel pump seals) that contain elastomer compounds incompatible with biodiesel, although the effect is lessened as the biodiesel blend level is decreased. Experience with B20 has found that no changes to gaskets or hoses are necessary.

Is there and objective biodiesel fuel formulation standard in this country?

The biodiesel industry has been active in setting standards for biodiesel since 1994 when the first biodiesel taskforce was formed within the American Society for Testing and Materials (ASTM). ASTM approved a provisional standard for biodiesel (ASTM PS 121) in July of 1999. The final specification (D-6751) was issued in December 2001. Copies of specifications are available from ASTM at <http://www.astm.org>.

What is the shelf life of biodiesel?

Most fuel today is used up long before six months, and many petroleum companies do not recommend storing petroleum diesel for more than six months. The current industry recommendation is that biodiesel be used within nine months, or reanalyzed after nine months to ensure the fuel meets ASTM specifications (D-6751). A longer shelf life is possible depending on the fuel composition.

Will biodiesel use void warranties?

The use of biodiesel in existing diesel engines does not void parts and materials workmanship warranties of any major US engine manufacturer.

How much biodiesel is being produced in the U.S. today?

As of May 2006, there are 65 biodiesel production facilities in the United States with the capabilities of producing more than 395 million gallons of biodiesel annually.

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