

Biodiesel: The Alternative Fuel for Today

Provided by: [Green Source Fuel](http://www.greensourcefuel.com)

What is biodiesel?

Biodiesel is a substitute for petroleum diesel obtained by reacting vegetable oil with alcohol and a lye catalyst. Usable straight, or blended with petroleum diesel *in any concentration*, it can run in any diesel engine built since 1995 *without modifying the engine* – just add to the fuel tank and drive on. If refueling is needed when no biodiesel is available, regular diesel fuel can be used with no problem.

What are the benefits of biodiesel?

Environmentally Safer than Petroleum Diesel

- Significantly reduces most gaseous and particulate emissions by a huge amount, some (such as sulfurous emissions) almost completely. So, it is cleaner and smells better. Biodiesel use in buses and trucks would significantly reduce carbon dirt, harmful emissions and smells in urban areas.
- It is “carbon neutral” - There are caveats, but it need not increase global warming since burning it simply emits the same carbon that the source plants/animals removed from the atmosphere.
- It creates no harmful byproducts and can be washed and refined in a waterless manner. A biodiesel production facility is, in no way, as noxious as a petroleum refinery.
 - Other than the space required to store the raw oil and finished product, a biodiesel production plant is infinitely smaller than the smallest refinery
- It biodegrades faster than sugar (95% in 4 weeks in soil) and is less toxic than table salt.
- The “flash point” is double that of diesel meaning that it is less flammable than diesel, though that poses no problems within the vehicles or appliances that burn it.

Economic

- Keeps money in the domestic economy, instead of sending it overseas. Provides domestic jobs, both in farming and in production.
- Provides more than 3 times as much fuel, for the same amount of energy used for production, as petroleum diesel. Properly manufactured, all byproducts are recaptured or usable in other products. Some bio-fuels use up nearly as much energy as is contained in the final fuel product.

Environmental & Economic

- Various American diesel vehicles being sold successfully in Europe, which do not meet strict US diesel emission requirements, would meet them if run on 100% biodiesel.

National Security

- Reduces dependence on foreign oil.
- Is a sustainable, renewable resource that is grown domestically.

Mechanical

- Provides superior lubricating properties. Diesels actually run quieter & smoother on biodiesel!
- It's solvent properties keep fuel lines, injectors, and combustion chambers clean.
- Contains no sulfur, reducing emissions and soot clogs in vehicles equipped with EGRs.

Versatile

- Can be used a heating fuel as well as in diesel engines. It will also burn cleanly in certain oil lamps and camp stoves. Some kinds can be “cracked” to produce bio-kerosene for jet engines.

Are there drawbacks? Yes, but there are solutions now, or coming soon:

Cost

- The price of petroleum-biodiesel blends is affordable, compared to petroleum diesel, but B100 (100% biodiesel) is priced from 10-40% more than petroleum diesel.
 - Consider that the price of petroleum diesel is artificially low considering the environmental and military costs of using it.
 - Biodiesel from algae, will be highly economical in the future.

Availability

- It's not as readily available as diesel fuel, YET. But that's changing daily as more and more biodiesel pumps come on-line.

Cold Weather

- Biodiesel flows much less easily at temperatures below freezing.
 - This can be addressed by mixing biodiesel with kerosene or other additives or by installing a fuel tank and fuel line heating system in biodiesel powered vehicles.

Nitrogen Oxides

- Biodiesel may produce slightly higher than normal nitrogen oxide emissions in some engine.
 - However, NOx can be "burned" with new technology for catalytic converters. Very often, simple engine tuning adjustments can solve that problem also.

Scarcity of Diesel Passenger Vehicles in the US

- Other than pickup trucks, diesel vehicles in the US are mostly limited to commercial vehicles (other trucks, buses, railroad locomotives).

Environmental in Our Area May Equate to Environmentally Harmful Elsewhere

- Because a large amount of vegetable oil is being imported, the countries in which it is produced are clearing and burning rain forests which defeats the benefits of biodiesel. This is avoided if existing farmland, and land "lying fallow" is utilized.

Old Engines

- Because of the solvent properties of biodiesel, engines older than 1995 can suffer softening of natural rubber hoses and gaskets that are exposed to the fuel.
 - In general, it is inexpensive to replace these with modern equivalents that are immune to damage.

Biodiesel has Solvent/detergent Properties

- Biodiesel can loosen deposits left by previously used petroleum diesel, so is wise to keep an eye on fuel filters, which may become clogged with loosened deposits. Some thinning of engine oil has been observed with biodiesel.
 - However since it has, itself, superior lubricating properties compared to diesel, this should not be a problem if the oil is changed as recommended by the engine manufacturer.

For more information about biodiesel, research the web sites below:

National Biodiesel Board

The NBB is the national trade association representing the biodiesel industry as the coordinating body for research and development in the US. <http://www.biodiesel.org>

From the Fryer to the Fuel Tank by Joshua Tickell, Tickell Energy Consulting The original biodiesel guide For anyone even remotely serious about biodiesel. <http://www.biodieselamerica.org>

BiodieselNow A consumer-driven web site dedicated to spreading the word about biodiesel. Has an extensive links section for more information and quite active forums. <http://www.biodieselnow.com>

For More Information, Contact Green Source Fuel