

“Oil the News That’s Fit to Print!”



Spotlight on...

Biodiesel

by Kristin Huff

Blackstone Online: Oh So Close!

We mentioned in a previous newsletter that we are working on getting all our reports online so you can access them any time. And we're almost there! The new service should be up and running soon.



You'll be able to log on with your user name and password to see all the reports we've done for you, and print them or email them from there. You'll also be able to see your billing/invoice status and make changes to your account (new address, different email, etc.). We will be emailing you soon about this new service!

Biodiesel: The Good and the Bad

Pros

- Biodiesel can be used in existing engines, without modifications.
- Biodiesel blends perform similarly to regular diesel in terms of power, torque, and

When Hurricane Katrina hit and gas prices jumped last year, I knew more than one person who slapped their forehead over gas prices and traded in their gas-guzzler for a more fuel-efficient vehicle. Of course, Katrina was not the end of the rise in fuel; lately prices have been inching back up to (and past, depending on where you live) \$3.00 a gallon.

We love our cars and trucks—there's no doubt about that. But with no end in sight to the ever-increasing fuel prices, many people are looking at what they can do to save a little cash when they fill up. If you drive a diesel, one of your alternatives is biodiesel. While it may not save you much money right now, any steps we can take to producing more fuel in the US is a positive step toward keeping fuel prices in check.

Understanding biodiesel

Any engine that runs on diesel #2 can run on biodiesel. If your engine takes regular gas, you can't use biodiesel. Technically, biodiesel is the ester created when vegetable oil (usually soybean oil, but palm and other types of oil are also used) is mixed with an alcohol in the presence of a catalyst. The mixture is allowed to settle and separate out; the top layer is biodiesel, the bottom is glycerol. The biodiesel is washed to remove impurities before being filtered for use. Using a different method, algae can also be used to make biodiesel. (Algae yields up to 15,000 gallons of biodiesel per acre, compared to soybeans, which produce 60 gallons of biodiesel per acre.)

Biodiesel is becoming popular because it's biodegradable and nontoxic. It contains no petroleum, so it creates fewer emissions when it's burned: fewer emissions means less air pollution when it's run in land-based engines, and less water pollution when it's run in marine engines. You'll hear terms like "B20" or "B5" thrown around when people talk about biodiesel—the number simply refers to the percentage of biodiesel being used (B20 is 20% biodiesel, 80% regular diesel). "Neat" biodiesel means the same thing as

fuel consumption.

- It's good for the environment: less emissions means less pollution.
- Using biodiesel does not void the warranty of any major US engine manufacturer.
- If you know what you're doing, you can generally make it for 50 to 90 cents per gallon.

Cons

- Biodiesel is a solvent, and in its pure form it will degrade older types of rubber used in engines made before 1993.
- Cold weather can cloud (or gel) biodiesel, just like regular diesel.
- Biodiesel is a solvent, so when it's first introduced to an engine, it can release sludge or deposits that have built up, and you may need to replace your fuel filter.
- Biodiesel can increase the price of filling your tank a little. (Others say the fuel efficiency increases with biodiesel, which can offset this factor.)
- Some say using farmland to grow soybeans and other vegetables for fuel is a waste of land. In some areas rainforests may be cut down to grow crops for making biodiesel.

ordering your whiskey "neat": it's 100% biodiesel with nothing else thrown in.

So if biodiesel is based on vegetable oil, can you go out to McDonalds and get a free batch of used fryer oil to run in your new diesel engine? You could, but not before converting that used oil to biodiesel...and even then, we wouldn't really recommend it unless you truly invest the time and energy into doing it right. Homebrewed biodiesel tends to not be very consistent in quality and you do use chemicals that can be dangerous. If you decide to make your own, there are plenty of "how to" websites out there for instruction. But be careful: as one homebrew site says, if you hurt, maim, blind, or kill yourself, it will make us very, very sad, but not liable.

Just like anything, there are people who love biodiesel and people who hate it. Varying opinions on the subject can be found all over the Internet, but a quick summary of the pros and cons is listed at the sidebar to the left.

Biodiesel is available in all 50 states, though availability is concentrated in the Midwest, where the crops that become the fuel are grown. But you can also get it in and around larger metropolitan areas in the mountain states and on the East and West Coasts.

As we mentioned before, biodiesel can be used in an engine that runs on #2 diesel. It runs in trucks, of course, but also boats, generators, air compressors, water heaters, kilns, tractors, irrigation pumps, and sawmills, to name a few others.

Biodiesel in your engine

So how will biodiesel affect your engine? We have seen many oil samples from people using it, though we have never conducted a study to determine scientifically how it performs. But other people have done tests, including the good people at the Agricultural Engineering Department at the University of Missouri-Columbia. They tested four 5.9L Cummins engines using varying blends (B1, B2, and B100) of biodiesel. Although the findings were not conclusive because some factors were not under the complete control of the researchers, the results suggested that using biodiesel caused the engines to wear a little better than they do when running regular diesel. To be specific, the levels of aluminum, iron, chrome, and lead were slightly lower in the engines running biodiesel. The study also suggested that the wear rates stayed the same regardless of what blend biodiesel was being used. You can read the study for yourself here:

http://bengal.missouri.edu/~pavt0689/Engine_Oil_Analysis_of_Diesel_Engines_Fueled_with_0,1,2,100_Biodiesel.pdf

Our casual, unscientific observations here at Blackstone have been that engines running biodiesel wear just as well as those running regular diesel. But samples from people making their own biodiesel from waste vegetable oil are a completely different story.

This person mentioned on the oil slip that he was running vegetable oil in his engine, though he didn't specify what type. From the looks of it, we think he's running waste vegetable oil. We can't say for sure that the sodium is coming from used fryer oil, but we think it is. The poor quality of the oil is causing high upper-end wear, as you can see in the aluminum, chrome, and iron levels. We have seen plenty of engines running on biodiesel that look just fine, so we think this is a homebrew that's not getting the job done.

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