



Rendered Fats for Biodiesel Facts and Myths

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What can be used to make biodiesel?

Biodiesel can be made from many sources of fats and oils. Oil can be extracted from rapeseed, soybeans, Jatropha, mustard, flax, sunflower, palm, and hemp. Animal fats including tallow, white grease (lard), yellow grease, chicken fat, and fish oil are also good raw materials for biodiesel. The most common raw materials for biodiesel in the U.S. today are virgin soybean oil, animal fats, and recycled vegetable oil.

Which feedstocks for biodiesel are most sustainable?

Biodiesel is made from renewable resources. It replaces petroleum and reduces greenhouse gases, carbon monoxide, hydrocarbons, particulates and other harmful emissions. Biodiesel made from rendered fats are even more sustainable because they are by-products of the meat processing industry or recycled cooking oils. This saves millions of acres of agricultural land and does not compete with food production.

Common myth: biodiesel made from animal fat does not work in cold weather

The fact is that all types of biodiesels will gel in very cold temperatures, just as the common #2 diesel does. Although pure animal fat-based 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. Below is a chart showing the differences between using various blends of biodiesel.

Fuel	Cloud Point		Pour Point	
	°C	°F	°C	°F
No. 2 Diesel	-23	-9	-27	-17
Soy Biodiesel	2	35	0	32
Yellow Grease Biodiesel	5	41	3	37
Tallow Biodiesel	14	57	18	64
2% Soy Biodiesel	-21	-5	-27	-17
2% Yellow Grease Biodiesel	-21	-5	-27	-17
% Tallow Biodiesel	-20	-4	-27	-17

Source: Biodiesel Cold Weather Blending Study by the Cold Flow Blending Consortium

Common myth: biodiesel from animal fat has poor quality characteristics

The fact is that biodiesel fuels produced from vegetable oils and animal fats are very similar. Many studies have indicated there is no basis for making a distinction between the two fuels in terms of their impact on engine performance and emissions. They contain the same chemical compounds but in different amounts. The fuels respond in a similar manner when burned in a diesel engine. Both fuels reduce unburned hydrocarbons, carbon monoxide, and particulates. All biodiesel fuel that passes the American Society for Testing and Materials standards (ASTM D 6751) will be of high quality.

Common myth: biodiesel from animal fat causes filter plugging in my engine

The fact is that biodiesel made from animal fats 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 can happen with any type of biodiesel, regardless of what it is made from and can be solved with biodiesel blends.

Common myth: Engine manufacturers will not warranty their engines if I use biodiesel made from animal fat

The fact is that most auto manufacturers do not extend their warranties to the fuel used. Since most auto manufacturers and mechanics are not familiar with biofuels, they often incorrectly blame mechanical problems on biofuel. Theoretically, if you bought a tank of "bad fuel," the fuel provider would be the one to cover your repair costs and your auto manufacturer would not void your warranty. To do this, it must be proven that the fuel does not meet quality specifications. Most original equipment manufacturers, dealers, and customer service departments currently tell their customers the use of up to 5% biodiesel (B5) is recommended, with the requirement that the pure biodiesel fuel adhere to the quality standards specified by American Society of Testing and Materials standard (ASTM D 6751) prior to blending.

Advantage: biodiesel made from animal fat has a higher cetane number

This means cleaner and more efficient burning in diesel engines. Cetane numbers rate the ignition properties of diesel fuels, just as octane numbers determine the quality and value of gasoline. It's a measure of a fuel's ability to ignite when it's compressed. The higher the cetane number, the more efficient the fuel. Animal fat biodiesel has a higher cetane number than plant oil biodiesel because of its oxygen content. The higher cetane number improves engine performance, cold starting, and warm-up, and helps engines run smoothly.

Advantage: there is a steady supply of animal fat

The availability of tallow is relatively constant. Unlike virgin vegetable oils, inedible tallow, greases, and lard are recycled by-products that will not increase the demand of commodity raw materials. Currently, about 11 billion pounds of rendered fats are produced annually and only 3-8% of it is used in biofuels (yielding as much as 116 million gallons of biodiesel). With trends of growing animal production in the U.S. predicted by USDA/ERS, increased case-ready retail meat products, and increased restaurant business, it's safe to assume a continued 1% annual growth in raw materials available to rendering.

Sources:

http://www.biodiesel.org/resources/reportsdatabase/reports/gen/19960808_gen-218.pdf

http://www.biodiesel.org/pdf_files/B5_warranty_statement_32206.pdf

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