

An Overview of Biodiesel Fuel in Michigan

WHAT IS BIODIESEL?

Biodiesel is the name of an alternative diesel fuel produced from domestic, renewable resources such as refined soybean oil. It can be used in unmodified diesel engines with the current fueling infrastructure. Most diesel engine manufacturers will allow up to 5 percent biodiesel blends in their vehicle engine warranty as the Original Equipment Manufacturer. 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 without modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics. *Fuel grade biodiesel must be produced to strict industry specifications (ASTM D6751) in order to insure proper performance* (National Biodiesel Board). Biodiesel blends can be used in stationary diesel generating engines and conventional diesel engines in your truck, car, boat, tractor, and other vehicles. The renewable fuel can directly replace petroleum products, thus reducing the country's dependence on imported oil. Biodiesel offers safety benefits over petroleum diesel because it is much less combustible. It is safe to handle, store, and transport. Its physical and chemical properties are similar to petroleum-based diesel fuel (US Department of Energy).

Rudolph Diesel, the inventor of the diesel engine, experimented with various fuels including vegetable oils such as peanut oil. By the early twentieth century, however, the diesel engine was adapted for petroleum distillate fuel, which by then was plentiful and available at lower cost.

Commercial use of biodiesel, a renewable fuel made from vegetable oils and other feedstocks, started again in 1999 after B20, a 20 percent mixture of biodiesel with 80 percent petroleum diesel, was approved as an alternate fuel for vehicle fleets covered by the U.S. Energy Policy Act. The most common feedstock for biodiesel production in the United States is soybean oil, but other oils or fats are potential feedstock sources as well. One such alternate feedstock is yellow grease, which is primarily recycled cooking oil from restaurants, and another popular one is animal fats, which are a by-product from livestock and poultry processing plants.

ENVIRONMENTAL BENEFITS

Biodiesel is a renewable energy and helps to reduce harmful tailpipe emissions and greenhouse gas emissions that contribute to air pollution. An increased focus on renewable energy will help to reduce toxins in our air and water, alleviate our dependency on imported fossil fuels, ultimately reduce import costs, and create good paying jobs in Michigan for production of renewable fuels (Michigan Environmental Council). Carbon Dioxide is one of the main gases contributing to global warming. Biodiesel (100 percent) reduces net carbon dioxide emission by more than 75 percent over petroleum diesel. Biodiesel also produces less particulate matter, carbon monoxide, and sulfur dioxide emissions (all air pollutants under the Clean Air Act) (National Renewable Energy Laboratory). Biodiesel has the highest energy balance of any fuel. For every one unit of fossil fuel used in the production of biodiesel, 3.2 units of energy are

gained. Compare that to petroleum diesel, which has a negative energy balance of 0.88 to one (National Biodiesel Board).

HEALTH BENEFITS

Biodiesel reduces air toxins by 90 percent. Air toxins are the chemicals in the air that are known or suspected to cause cancer and other negative health effects. Biodiesel significantly reduces the compounds linked to cancer. Sulfur is what makes the stench associated with diesel, and biodiesel contains almost no sulfur. Breathing the smoke from diesel exhaust can trigger an asthma attack. The use of biodiesel reduces particulate matter by up to 40 percent. With biodiesel, America can produce its own cleaner-burning diesel alternative fuel, which helps clean up the air as soon as it goes into the fuel tank (American Lung Association).

ENERGY BENEFITS

Today the U.S. imports more than half of its oil, leaving American consumers at the mercy of OPEC, the Middle East, and other petroleum-exporting nations. Michigan has to import 100 percent of the coal and uranium, 96 percent of the oil and petroleum products, and roughly three-fourths of the natural gas we consume. Market prices since 2000 for fossil fuels have more than doubled. Michigan consumers, businesses, and government now send more than \$18 billion a year across our borders to pay for energy fuels. As a domestic, renewable source of energy, biodiesel can reduce our dependence on foreign oil and increase the ability of the United States to control its own national security and economic future by increasing the availability of domestic, renewable fuel supplies.

COLD FLOW PROPERTIES

As with any diesel fuel, cold flow properties are important. B20 soy biodiesel will increase the cold flow properties (cold filter plugging point, cloud point, and pour point) of petroleum diesel approximately two to ten degrees Fahrenheit. The solutions for this potential issue are the same as with low-sulfur #2 diesels (i.e., blending with No. 1 diesel fuel, utilization of fuel heaters, and storage of the vehicle in or near a warm building). Soy biodiesel appears to be unaffected by conventional pour point depressants.

CURRENT SUPPLY

Michigan currently imports biodiesel primarily from Illinois, Kentucky, Minnesota, and Ohio. The first commercial biodiesel plant in the state was opened in August 2006 in Gladstone, Michigan, by “Ag Solutions, Inc.” It is dedicated to producing biodiesel according to ASTM D6751, with at least 5 million gallons per year capacity and can be expanded. Several other commercial plants are presently under construction in the state and are expected to open over the next 12 months. Michigan presently uses over 1 billion gallons of diesel fuel annually.

WHERE CAN YOU PURCHASE BIODIESEL FUEL IN MICHIGAN?

Use the link here for Soy-based Biodiesel Suppliers List: www.michigansoybean.org (Michigan Soybean Promotion Committee).

WHAT 2007 “CLEAN DIESEL” VEHICLES MANUFACTURED IN MICHIGAN WILL HAVE FACTORY FILL WITH B5 BIODIESEL BLEND?

[Jeep® to Fuel Grand Cherokee CRD with B5 Biodiesel Blend at the Factory](#)

Chrysler Group announced July 27, 2006 that its first diesel-powered, full-size sport utility vehicle (SUV) offered in the United States will be shipped from the factory with B5.



ADDITIONAL RESOURCES

National Biodiesel Board (www.nbb.org); U.S. Department of Energy (www.doe.gov) and Michigan Soybean Promotion Committee (www.michigansoybean.org).

MICHIGAN STATE LEGISLATURE AND GOVERNOR ADOPT RENEWABLE FUELS LEGISLATION

On July 7, 2006, Michigan Governor Jennifer Granholm signed into law a seven-bill comprehensive package on renewable fuels, including biodiesel fuel. Links to Michigan’s renewable fuels legislation are as follows:

- [SB 1074, PA 268](#)
- [SB 1075, PA 269](#)
- [SB 1078, PA 270](#)
- [SB 1079, PA 271](#)
- [HB 5181, PA 272](#)
- [HB 5752, PA 273](#)
- [HB 5754, PA 274](#)

Highlights of the legislative package noted above include the following:

- Alternative fuels in the state would temporarily be taxed seven cents cheaper than regular fuel and ten renaissance zones were created.
- The State of Michigan would install fueling infrastructure for renewable fuels at its motor transport facilities so that state employees and vehicles that use the fuels would have easy access.
- All facilities selling alternative fuels would have to register with the state.
- A Renewable Fuels Commission would be created in the Michigan Department of Agriculture (MDA) to recommend strategies in the promotion and research of biodiesel, ethanol, and other renewable fuels.
- The Michigan Strategic Fund would administer matching grant programs to help encourage incentives to service stations and bulk fuel plants to stock and sell alternative fuels to the general public.
- Finally, diesel fuel, biodiesel blends, and hydrogen fuels have all been added to MDA’s Motor Fuel Quality Act for fuel testing and inspection program.