

Biodiesel

What it is and where it is used

Biodiesel is a renewable fuel used in diesel engines and is derived from plant or animal based natural oils. Under the Clean Air Act (CAA), EPA has the responsibility to register fuels and fuel additives. Biodiesel is currently registered with EPA as an acceptable motor vehicle diesel fuel and motor vehicle diesel fuel additive.

Biodiesel can be used in its pure form (called B100) or it can be blended with petroleum diesel. B100 must meet the fuel standard set by the American Society of Testing and Materials (ASTM D6751-07b) and approved by EPA in order to be used in blends. EPA also develops regulatory requirements for biodiesel producers and blenders to help ensure compliance with the ASTM standard. Common blends include B5 (5 percent biodiesel and 95 percent petroleum diesel) and B20 (20 percent biodiesel and 80 percent petroleum diesel); however there are other blends available. B100, meeting ASTM D6751-07b, has been tested and approved for blending in concentrations up to B20.

Biodiesel can be used with petroleum-based diesel fuel (up to a B20 blend) in existing diesel engines with little or no modification. Before use in existing diesel engines, always check with your engine manufacturer to confirm warranty coverage.

Use of certain blends of the accepted biodiesel standard of ASTM D6751-07b is covered by some manufacturer's warranties. Check with your manufacturer for the most up-to-date warranty information.

What it is not

- Biodiesel is not the same thing as raw vegetable oil or unaltered, used frying grease. It is precisely produced by a chemical process which removes the glycerin from the oil. Other bio-derived materials that do not meet the ASTM standard may cause engine and fuel system problems and void engine warranties.
- Biodiesel is not ethanol. For more information on ethanol, see the Ethanol fact sheet.

Use of biodiesel

Biodiesel is an excellent lubricant and can reduce wear in diesel engines. Blends up to B5 can be used in any diesel engine without modifications and without violating the warranty. While B20 and lower blends do not require engine modifications, not all engine manufacturers cover use of blends higher than B5 in their warranty. The solvent properties of biodiesel will clean out any residue present in an engine system and if left unchecked this could lead to clogged filters.



Emissions from biodiesel use/environmental effects

- Biodiesel can reduce emissions of particulate matter (PM) and some ozone-forming pollutants, including hydrocarbons (HC) and carbon monoxide (CO). The amount of emission reductions depends on the blend concentrations, engine type and feedstock.
- B20 emission reductions are typically 15 percent for carbon dioxide, 10 percent for PM, 21 percent for HC and 11 percent for CO.
- Not all emissions are reduced. Nitrogen oxides (NO_x) are thought to increase by about 2 percent when using a B20 blend.

Permitting biodiesel production facilities

- Facilities with emissions under 40 tons per year (TPY) of criteria air pollutants, under 25 TPY of combined hazardous air pollutants (HAPs), and under 10 TPY of any single HAP, are generally permit exempt, unless they are subject to an emission, equipment, or work practice standard under NSPS (New Source Performance Standard) or NESHAP (National Emissions Standards for Hazardous Air Pollutants).
- DEQ's Air Quality Division (AQD) operates a dual permitting system, meaning that it issues both construction and operating permits to eligible facilities.
- A construction permit is required before a new source is constructed or before an existing source is modified. The construction permit is issued after it is determined the source is designed to comply with all applicable rules and pre-construction requirements.
- An operating permit is issued after construction is completed and demonstration is made that the source is capable of meeting applicable emissions limitations and air pollution control requirements. Permits are further classified as either major, synthetic minor, or minor, based on the source's potential-to-emit (PTE) different air pollutants.
- A major source, requiring a major source permit, is any source with a PTE of 100 TPY or more of any criteria air pollutant, 10 TPY or more of any one HAP, or 25 TPY or more of any combination of HAPs.
- A minor source, requiring a synthetic minor or a minor source permit, is any source that does not meet the major source definition.
- If you aren't sure you need a permit, DEQ's AQD staff will perform an Applicability Determination (AD) for you. The AD is a written document issued by DEQ to determine whether a particular source or operation is subject to the requirements of a rule, including whether or not you need a permit. If you need a permit, the fee for the AD is credited towards the permit fee.

Where to purchase biodiesel

Some gas stations sell low-level blends like B12 or B15; however, there are currently no B20 or higher public biodiesel fueling stations in Oklahoma. For the latest updates, check www.afdc.energy.gov/locator/stations.

Contacts:

For general information on biodiesel, or for permitting information for biodiesel production facilities, contact DEQ's AQD at 405-702-4100.

Links for More Information:

- Environmental Protection Agency
www.epa.gov/renewable-fuel-standard-program
- Association of Central Oklahoma Governments Clean Cities
www.okcleancities.org
- Tulsa Clean Cities
www.tulsacleancities.com
- National Renewable Energy Laboratory
www.nrel.gov/transportation/fleettest-fuels.html
- Alternative Fuels Data Center
www.afdc.energy.gov/fuels/biodiesel.html
- National Biodiesel Board
www.nbb.org or biodiesel.org