

# Biodiesel - The Fuel

**Biodiesel is a completely natural, renewable fuel applicable in most any situation where conventional petroleum diesel is used. Even though "diesel" is part of its name, there are no petroleum or other fossil fuels in biodiesel. Biodiesel is 100% vegetable oil based.**

Currently biodiesel is produced mainly from field crop oils throughout Europe and used widely in a range of diesel vehicles not easily found in the U.S. The fuel produced in Hawaii by Pacific Biodiesel, Inc. is made totally from recycled cooking oil and used mostly in generators of all sizes, commercial diesel equipment, vehicles, and marine vessels. Since the opening of the Maui processing plant, it has become more economical for pump trucks to deliver used restaurant oil to Pacific Biodiesel than to landfill it, resulting in a landfill diversion total of over 40 tons of used cooking oil per month.

In the past decade, biodiesel has been gaining worldwide popularity as an alternative energy source because of its many benefits. Besides the huge landfill reduction benefits, this environment-friendly fuel reduces tailpipe emissions, visible smoke and noxious odors. It operates well in a conventional diesel engine with very few or no engine modifications, and can also be used in a blend with conventional diesel while still achieving substantial reductions in emissions. Because biodiesel is non-toxic, biodegradable and non-flammable, handling and storage are safer than conventional petroleum diesel fuel. And, the cost is competitive with diesel.

Technically, biodiesel is Vegetable Oil Methyl Ester. It is formed by removing the glycerol molecule from vegetable oil in the form of glycerin (soap). Once the glycerin is removed from the oil, the remaining molecules are, to a diesel engine, similar to petroleum diesel fuel. There are some notable differences. The biodiesel molecules are very simple hydrocarbon chains, containing no sulfur, ring molecules or aromatics associated with fossil fuels. Biodiesel is made up of almost 10% oxygen, making it a naturally "oxygenated" fuel.

## Facts

### Power

- One of the major advantages is the fact that it can be used in existing engines and fuel injection equipment (no modification required) without negative impacts to operating performance.

### Fuel availability/economy

- Virtually the same MPG rating as petrodiesel and the only alternative fuel for heavyweight vehicles requiring no special dispensing and storage equipment.

## **Storage**

- Readily blends and stays blended with petrodiesel so it can be stored and dispensed wherever diesel is stored or sold.

## **Combustibility/Safety**

- Biodiesel has a very high flash point (300°F) making it one of the safest of all alternative fuels.

## **Production/Refining**

- The only alternative fuel that can boast of a zero total emissions production facility

## **Lubricity**

- The only alternative fuel that can actually extend engine life because of its superior lubricating properties.

## **Environmental Impact**

- **The only renewable alternative diesel fuel that actually reduces major greenhouse gas components in the atmosphere . The use of biodiesel will also reduce the following emissions:**
  - carbon monoxide
  - ozone-forming-hydrocarbons
  - hazardous diesel particulate
  - acid rain-causing sulfur dioxide
  - lifecycle carbon dioxide