



- Biofuels are a type of liquid or gaseous fuels produced from biomass
- One type of biofuel is **biodiesel**
- **Biodiesel** is a diesel-equivalent processed fuel made from vegetable oils or animal fats
- **Biodiesel** can be blended with petroleum diesel at different concentrations in most modern diesel engines. All diesel engines can operate with mixtures of up to 5% biodiesel (B5), however certain engine manufacturers do not discourage and actually suggest higher blends of biodiesel, even up to pure biodiesel (B100)
- **Biodiesel** can be produced from different raw materials including rape, soy, palm oil, sunflower and waste cooking oil

## Benefits of Biodiesel

- Biodiesel is made from raw materials which are renewable
- Biodegradable and non-toxic
- Produces less Particulate Matter (PM10), Carbon Monoxide and Hydrocarbons than petroleum diesel
- Produces about 35-40% less net-lifecycle carbon dioxide emissions than the petroleum diesel it replaces

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*This Project is supported by:*

Intelligent Energy  Europe

(Contract No. EIE/06/015/SI2.442654)

*Carbon/Efficiency Labelling  
&  
Bio-Blending for Optimising  
Benefits  
of Biodiesel & Additive Use*



## BIODIESEL

*"The use of vegetable oils for engine fuels may seem insignificant today but such oils may become, in the course of time, as important as petroleum and the coal-tar products of the present time"*

*- Rudolph Diesel, inventor of the Diesel engine (1912)*



*Informative  
Leaflet*

# Definition

**Biodiesel** is a renewable fuel for use in diesel engines as a substitute/additive for petroleum derived diesel. It can be produced from both animal and vegetable fat. It is produced by reacting fats and/or oils with sodium hydroxide in the presence of an alcohol catalyst, typically methanol to produce glycerin and a methyl ester. This methyl ester is then water or dry washed to produce biodiesel conforming to the European Norm **EN 14214**.

# Properties

Biodiesel is a liquid which can vary in color between golden and dark brown depending on the raw material used as its feedstock. It is practically immiscible with water, has a **high boiling point, low vapor pressure** and has a **density of about 0.88 g/cm<sup>3</sup>**, which is less than that of water. Typical methyl ester biodiesel has a **flash point of approximately 150°C**. Compared to petroleum diesel which has a calorific value of 35.7 MJ/litre, biodiesel has a lower **calorific value of 32.8 MJ/litre**, however in practice at low concentrations **engine performance is not affected**.

# Labelling of Biodiesel

Much of the world uses a system known as the **"B" factor** to state the amount of biodiesel in any fuel mix. Biodiesel can be mixed with petroleum diesel in different percentages, from 1 to 99, which is represented by a number following the letter B. For example, B20 is 20 percent bio-



diesel with 80 percent petroleum diesel and B100 is 100 percent biodiesel, with no petroleum diesel added.

# Technological Requirements

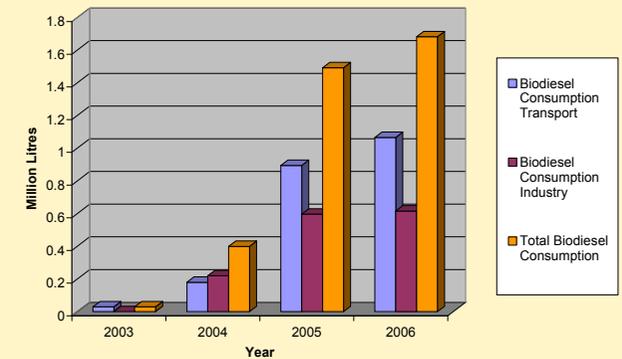
Biodiesel is basically comparable to petroleum diesel, thanks to its chemical similarity to the petroleum fuel. Despite this, biodiesel possesses certain features which may necessitate specific requirements when used in a diesel engine. The following are the main and most common requirements:

- Biodiesel poses different material-related requirements compared with petroleum diesel. All parts coming into contact with biodiesel, for example hoses and seals must be resistant to biodiesel. In particular biodiesel will degrade natural rubber gaskets and hoses in vehicles (mostly found in vehicles manufactured before 1992), although these tend to wear out naturally and most likely will have already been replaced with fluorinated elastomers, which is non-reactive to biodiesel.
- Biodiesel is very hard to evaporate; therefore, it can accumulate in engine oil especially during idling operation by commercial vehicles. Consequently, all manufacturers of commercial vehicles prescribe shorter oil-change intervals in order to avoid damage by diluted engine oil.
- After extended periods of running on pure petroleum diesel, vehicles converted to biodiesel should undergo a one-time fuel filter replacement after 2-3 tankfuls of biodiesel outside the regular service intervals. This prevents old depositions of petroleum diesel removed

by the flow of biodiesel through the fuel system from blocking the new fuel filter.

# Availability in Malta

The use of biodiesel in Malta has been on the increase during the past years, with annual production and consumption continuously surpassing those of previous years.



Currently, biodiesel produced from either locally sourced recycled waste cooking oil or imported vegetable oil, is the only type of biofuel available on the Maltese market, and in this regard local privately owned companies have been very active in producing and promoting biodiesel for local consumption.

Only one of these companies supplies biodiesel for the transportation sector and a number of petroleum filling stations retail biodiesel from their pumps. Around 30 petroleum filling stations, equivalent to about 40% of the total number of stations, are in fact now retailing biodiesel. Presently petroleum filling stations are permitted to store and dispense 100% biodiesel only.