

EMISSIONS COMPARISON

Comparison of CO2 (greenhouse gas) emissions in 2004 VW Jetta Wagon using various engines/fuels

Model	City/Highway MPG	CO2 tons/year
Automatic 2L Gasoline	23/30	7.4
Automatic TDI 1.9L PetroDiesel	32/43	5.8
Automatic TDI 1.9L B20 BioDiesel	32/43	4.9
Automatic TDI 1.9L B100 BioDiesel	32/43	1.3
for comparison:		
2004 Toyota Prius	60/51	3.5
2004 Ford Explorer 4L 2WD	16/21	10.7

NOTES:

based on fuel economy numbers from <http://www.fueleconomy.gov/feg/findacar.htm> using 15,000 miles driven per year, 45% highway, 55% city driving. BioDiesel reduction numbers from NREL study.

CO2 reduction from BioDiesel is due to the closed loop of the fuel cycle from plant to combustion and back

WHO USES BIODIESEL?

- US Military – B20 on various bases
- Harvard University – B20 for service vehicles/shuttles
- L.L. Bean – Heavy-Duty delivery vehicles
- Willie Nelson and Neil Young – Tour buses, vehicles
- Yellowstone National Park – Support Operations
- More than 20 other national parks
- East Kentucky Power Co-up – Off-road vehicles
- Darryl Hannah – Personal vehicles
- 2005 Jeep Liberty – Ships with B5 in the tank
- U.S. Postal Service – Several metro locations
- Florida Power and Light – City and suburban
- Alcoa – Davenport works, all diesel equipment
- And many more including thousands of private citizens!



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*BIODIESEL:
Renewable Domestic Fuel
Available Today*



WHAT IS BIODIESEL?

A clean burning, renewable diesel fuel replacement made from vegetable oils or animal fats. Biodiesel is the methyl (or ethyl) ester of vegetable oil and is very similar to the petroleum based diesel fuel it replaces, so it does not require any vehicle or storage modifications.

Biodiesel can be used as a pure fuel or blended with petroleum in any percentage. **B5**, a blend of 5% Biodiesel and 95% by volume of petroleum diesel has shown improvements in performance, enhanced lubricity and some reduction in emissions. A blend of 20 percent by volume Biodiesel with 80 percent by volume petroleum diesel called **B20**, has demonstrated significant environmental benefits with a minimum increase in cost. Pure Biodiesel is often termed **B100**.

WHY BIODIESEL?

- **Domestically produced - helps US farmers, removes foreign dependency.**
- **Reduces pollution.**
- **Renewable resource.**
- **Works in today's infrastructure including vehicles, distribution, and retail stations.**

BENEFITS OF BIODIESEL

- Biodiesel reduces carbon dioxide exhaust emissions by up to 80% vs. petroleum based diesel fuel.
- Biodiesel produces 100% less sulfur dioxide than petroleum based diesel. Sulfur dioxide is the major component of acid rain.
- Biodiesel reduces exhaust smoke (particulates) emissions by up to 75% so the usual black cloud associated with a diesel engine can be eliminated.
- The smell of the biodiesel exhaust is far more pleasant than petroleum based

diesel, some times smelling like popcorn or doughnuts if the fuel is made from a waste vegetable oil feedstock.

- Biodiesel is less irritating to the skin than soap and water. In fact, it is 10 times less toxic than table salt.
- Biodiesel is much less dangerous to put in a fuel tank as the flash point of biodiesel is 150°C (300°F) vs. petroleum diesel which is 70°C (150°F) and -40°C (-40°F) for gasoline.
- B100 biodegrades faster than sugar – even B20 biodegrades 40% faster than petroleum based diesel.
- Biodiesel is a much better lubricant than conventional diesel fuel and extends engine life -- a German truck won an entry in the Guinness Book of Records by traveling more than 1.25 million km (780,000 miles) on biodiesel with its original engine.
- Low Sulfur and Ultra Low Sulfur diesel require additives to add the lubricity back into the fuel; biodiesel is a totally renewable additive for this role and compliments the use of ULSD.
- Applicable for EPA alternative fuel credits.
- A diesel engine vehicle does not need to be modified to use biodiesel.
- Biodiesel has a high cetane rating, which improves engine performance: 20% biodiesel added to conventional diesel fuel improves the cetane rating 3 points, making it a Premium fuel.
- Useable in heating oil applications.