

Easier on Marine Environment

Biodiesel is an obvious candidate for use in marine applications. Independent tests have found that pure biodiesel is non-toxic, readily biodegradable and essentially free of sulfur and aromatics.

Biodiesel will not harm fish. The 96-hr. LC50 (lethal concentration) for Bluegills for C16-18 methyl esters was greater than 1,000 mg./L. Concentrations above 1,000 mg/L are deemed "insignificant" according to NIOSH (National Institute for Occupational Safety and Health) Guidelines in its Registry of the Toxic Effects of Chemical Substances.



The Aqua Adventure

Biodiesel is easier on humans, too. Vessel operators report a noticeable change in exhaust odor. The reduction in smell and change of odor are more palatable with engine workers. In fact, it's been compared to the smell of French fries. Biodiesel users also report having no eye irritation.

Biodiesel is biodegradable. C16-18 methyl esters are considered biodegradable based on their chemical nature and test data collected for experimentally determined oxygen demand and carbon dioxide production as a percent of calculated theoretical values. C16-18 methyl esters do not show any micro biological inhibition up to 10,000 mg/L.



In tests performed by the University of Idaho, biodiesel in an aqueous solution after 28 days was 95 percent degraded. Diesel fuel was only 40 percent degraded. In a second study done in an aquatic environment (CO₂ Evolution), various biodiesel products were 85.5-88.5 percent degraded in 28 days, which is the same rate as sugar (dextrose). Diesel degradation was 26.24 percent.

Biodiesel offers more environmental benefits. For research vessels and consumers using commercial vessels, biodiesel offers a more environmentally-friendly alternative to regular diesel. Because it is non-toxic and biodegradable, consumers and researchers may pressure owners for biodiesel use, especially in sensitive or protected waterway areas.

Biodiesel is a renewable, domestic fuel. Biodiesel is made from renewable fats and oils, such as vegetable oils, through a simple refining process. The by-product glycerin is used in commercial applications from toothpaste to cough syrup. One of the principal commodities used as a source for biodiesel is soybeans, a major crop produced by almost 400,000 farmers in 29 states.

Biodiesel helps speed diesel degradation when used in blends with petroleum diesel fuel.

Biodiesel degrades about four times faster than petroleum diesel fuel. Also, when blended with biodiesel, the



degradation rate of petroleum diesel tripled when compared to diesel alone, according to a 1995 University of Idaho test.

Biodiesel can work in several marine factions.

Because biodiesel can replace or blend with petroleum diesel with little or no engine modifications, it is a viable alternative to several categories of the marine industry, including: recreational boats, inland commercial and ocean-going commercial ships, research vessels, and the U.S. Coast Guard Fleet. Today, much of the emphasis is on recreational boats, which consume about 95 million gallons of diesel fuel annually.



Biodiesel is a safe alternative.

Biodiesel has a higher flash point - a minimum of 260 degrees versus about 125 degrees Fahrenheit for regular #2 diesel. Biodiesel also offers low-pressure storage at ambient temperatures, handles like diesel and is safer to transport.

Biodiesel has higher lubricity.

Biodiesel blended at a 20 percent rate with petroleum diesel has a lower wear scar than traditional fuel. At the 20 percent blend level, biodiesel shows improved lubricity with low sulfur petroleum diesel containing high or low aromatic levels. Start-up, power, range and cold-weather performance characteristics are similar to diesel.

Even low levels of biodiesel (1-5%) with diesel fuel offer superior lubricating properties. Recent test results using the HFRR test showed a reduction in wear scar from 0.61 mm to 0.35 mm using a 1% blend of biodiesel with the base diesel.

Biodiesel is "user-friendly."

The use of biodiesel and biodiesel blends results in a noticeable change in exhaust odor. The reduction in smell and change of odor are easier on ship workers and pleasure craft boaters. In fact, it's been compared to the smell of French fries. Users also report no having eye irritation. Since biodiesel is oxygenated, diesel engines have more complete combustion than with petroleum.



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