

Frustrated by E10? Terrified of E15? *The Solution May Be Butanol*

By Bob Adriance

Last fall, the Department of Energy (DOE) released the results of its tests on the effects of E15 on marine engines — inboards, outboards, and I/Os. Without going into detail, all of the engines tested with E15 had problems, including severe damage to components, misfiring, and an increase in exhaust emissions. Two of the three outboards that were being tested conked out before the tests were completed. In contrast, the engines in an E0 control group did not exhibit any fuel-related issues. After reviewing the results, Margaret Podlich, the president of BoatUS, said that while the organization supports the effort to develop renewable fuels, the trend of using higher and higher levels of ethanol is clearly not the solution to America's energy problems.



If not E15, then what? The answer may be butanol, which, like ethanol, is an alcohol that can be made from corn, beets, and various cellulosic raw materials - switchgrass and wood chips. Unlike ethanol, however, butanol is less corrosive, doesn't attract moisture, can be shipped through existing pipelines, and has a higher energy value (110,000 Btu per gallon vs. 84,000 Btu for ethanol). In a recent test, an unmodified 1992 Buick, powered solely by 100-percent butanol, was driven coast to coast, averaging 26 mpg, which was a significant improvement over the 22 mpg that the car had been getting with E0 gasoline. Finally, in terms of flammability, butanol is similar to diesel fuel and would be far safer on a boat than gasoline or ethanol.

The next and obvious question is, why aren't we all using butanol? Part of the answer has to do with how the stuff is — or was — made. Back in the 1980s when the government started looking into various biofuels, the cost to produce butanol was significantly higher than it was to produce ethanol. That cost advantage gave ethanol a 30-year head start in the race to become the nation's biofuel. In the last few years, however, improved technology has meant that the cost to produce a gallon of each fuel is roughly the same (although butanol is far *cheaper* to produce in terms of the amount of energy delivered per gallon).

It's also possible that butanol may have some long-term effect on engines that has yet to be uncovered. (Remember, many years ago, everyone thought ethanol would solve the nation's energy problems.) There is also the not-too-insignificant reality of ethanol's financial and political momentum in the marketplace. But hope springs eternal; ethanol plants can be converted to make butanol, and if the stuff proves to be as promising as scientists believe it is, there may be good news down the road for anyone who owns a car or boat.

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