IV B 11 - Recommended Text

As a renewable fuel, butanol has a number of advantages. Its similarities to gasoline allow it to be mixed with gasoline in any proportion. As a result, it has been called a "drop-in" fuel for internal combustion engines. In addition, because butanol does not cause water in gasoline or diesel to separate, it can be transported through existing fuel pipelines. While butanol has higher energy content and lower octane content than ethanol, and while incomplete combustion of butanol can result in small amounts of strong smelling butyric acid, butanol has been demonstrated to work, without modifications, in vehicles designed for gasoline. The use of butanol as a commercial scale drop-in fuel has not yet been fully evaluated through the rigorous performance and environmental testing that is a necessary precursor to commercial use. Therefore, butanol's interactions with other gasoline components and its effects on combustion engines and post-combustion emissions are not fully understood. Further evaluation is required regarding blending characteristics, vehicle performance such as mileage and emission by-products, and other use characteristics.

Biobutanol is produced by fermentation of sugar using either genetically modified organisms or carefully selected, naturally occurring microorganisms. Biobutanol production from renewable sources is currently at pilot scale and has not yet been demonstrated at industrial scale. Also, while not yet fully established, biobutanol may require more energy and biomass to produce compared with other biofuels. Future possibilities include producing biobutanol using lignocellulosic material in a way similar to lignocellulosic ethanol production.

Currently biobutanol is not available in commercial quantities. Three companies are currently pursuing biobutanol production in the U.S.: Butamax (a joint venture of BP and DuPont), Cobalt Biofuels, and Gevo.

Original Text

As a renewable fuel, butanol has a number of advantages over ethanol. Butanol has higher energy density than ethanol, can be mixed with gasoline in more flexible proportions than ethanol, and is less corrosive, less volatile, and less water soluble than ethanol. As a result, butanol can be transported through existing fuel pipelines. However, the incomplete combustion of butanol can result in small amounts of butyric acid, which has a strong odor. Biobutanol is produced by fermentation of sugar using either genetically modified organisms or carefully selected, naturally occurring microorganisms. On the horizon is the possibility of producing biobutanol using lignocellulosic material in a way similar to lignocellulosic ethanol production.

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