

***Testing the Calorific Value and Exhaust Gas Emissions of Cassava-Based Bioethanol Fuel
with a Mixture of Peralite***

(Application on a 110 cc 4 Stroke Motor)

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ABSTRACT

One of the alternative energy sources that are currently developing is the use of bioethanol. Bioethanol is an environmentally friendly fuel and is a form of renewable energy that can be produced or produced from plants. This study aims to determine the effect of a mixture of cassava bioethanol with pertalite on the calorific value and exhaust emission value. This research was carried out for 3 months starting from April 2022. The method used is the experimental method. Peralite fuel will be mixed with bioethanol made from cassava, then the calorific value test is carried out on the fuel mixture with variations of PBi10, PBi30, PBi50, PBi70, PBi90, and PBi100. Meanwhile, exhaust emission testing with variations in a mixture of pure Peralite, PBi (lowest calorific value), PBi (Medium calorific value) and PBi (Highest calorific value) at idle rpm and 5000 rpm. The results showed that the testing of the calorific value and exhaust emission value was carried out once an experiment. The highest calorific value was obtained in the PBi10 mixture when compared to other mixtures with a value of 44392.64 kj / kg while for the lowest calorific value was obtained in the PBi100 mixture with a value of 8662.48 kj / kg. Then to the value of exhaust emissions, experiencing a decrease in carbon monoxide (CO) and hydrocarbon (HC) levels along with the large percentage of bioethanol added, the PBi50 mixture is the lowest level value compared to other mixtures, while there is an increase in carbon levels of Carbon Dioxide (CO₂) and Oxygen (O₂) along with the large percentage added, the PBi50 mixture is the highest grade value compared to other mixtures. It can be concluded that the percentage of fuel mixture that can be applied to vehicles is PBi10, PBi30 and PBi50.

Keywords: *Bioethanol, Cassava, Calorific Value, Exhaust Emissions*