ANALYSIS OF THE VISCOSITY AND HEATING VALUE OF A MIXTURE OF PERTALITE WITH BIOADITIVE FUELS FROM TURPENTINE OIL TO EXHAUST GAS EMISSIONS

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ABSTRACT

This study was conducted to determine the value of the characteristics and effects of mixing pertalite fuel with turpentine oil bioadditive on exhaust gas emissions, this study used a vario 150 FI motorcycle which is manufactured in 2016. This research method is an experimental with using tables and graphs to process the data. using the Heshbon HG-520 exhaust emission to measure CO, HC, CO_2, and Lambda exhaust emissions with rotation machine of idle rpm and 5000 rpm. Before testing exhaust emissions, this study tested the characteristics of the mixed fuel, namely viscosity and heating value. Pertalite fuel will be mixed with turpentine oil bioadditive, then it will be used on motorcycles. With the percentage of pertalite fuel mixture and turpentine oil bioadditive 10%, 20%, and 30%.

The results showed good characteristics. For the lowest viscosity at 10% turpentine oil mixture of $8{,}86 \times 10^{-1}$ cSt from the comparison of pertalite fuel. For the highest calorific value in the mixture of 30% turpentine oil of $3{,}95731 \times 10^{4}$ kJ/kg from the comparison of pertalite fuel. And for exhaust gas emissions with the addition of a mixture of turpentine oil can reduce motorcycle exhaust emission levels, especially levels of Hydrocarbons (HC) and levels of carbon monoxide (CO) both at idle and 5000 engine speed conditions.

Keywords: *Terpentine Oil, Viscosity, Heating Value, Exhaust Gas Emissions*