

**THE EFFECT OF CENTRIFUGATION AT 5000 RPM ON CRUDE PALM
OIL CHARACTERISTICS**

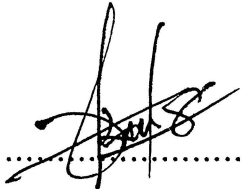
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“I declare that this thesis is the result of my own work except the ideas and summaries which I clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any degree.”

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ABSTRACT

The main objective of this experimental study is to determine the effects of the centrifugation of CPO by means of centrifuge it at 5000 rpm to reduce its viscosity in order to be one of alternative energy to ordinary diesel fuel. The characteristics to be measure are the density (kg/m^3), energy content (J/g), the kinematics viscosity (mm^2/s) and the flash point ($^{\circ}\text{C}$). The project focus on a research using a few equipments which are Bench Top Refrigerated Centrifuge Machine (Model Sigma 3-18k), KV4000 Series Digital Constant Temperature Kinematic Viscosity, Bomb Calorimeter (Model: IKA-WORKS C5000 CONTROL) and Semi Automatic Tag Open Cup Flash Point Tester. From the experiments being conducted the percentages of clear liquid (oil) becomes lesser as the temperature become lower and thus reduce the mass of the CPO. These phenomenons also apply to the density properties. In term of the energy content properties, the result from the experiment stated that the value is fluctuating around the 39000 J/g to 39400 J/g for the six different temperatures. The result from the kinematic viscosity machine running at 40°C water bath showed that as the temperature of CPO decrease, the kinematic viscosity value increasing up to 58.8860 J/g. The flash point value for CPO been centrifuge at 5000 rpm at 27°C (room temperature) is 261°C compared to the pure CPO which is 262°C . This project able to reduce the kinematic viscosity of the pure CPO up to 30% but still cannot be as good as the kinematic viscosity of the diesel fuel. Finally, this project achieved its main objective and should be proceed by testing the olein in the diesel engine and analyze the effect and olein to the engine in term of the exhaust emission, engine performance and fuel consumption.

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