



**THE EFFECT OF CENTRIFUGATION AT 14000 RPM ON CRUDE PALM
OIL CHARACTERISTICS**

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ABSTRACT

Today, people around the world are more concern about alternative energy to replace with fossil fuel due to limited source and environmental effect. There are many different forms in which alternative energy is available for example solar energy, wind mill, nuclear energy, hydroelectric and others. From statistics, Malaysia is the largest exporter of palm oil in the world follows by Indonesia. This was due to Malaysia is rich with oil palm tree. Oil palm trees are process into crude palm oil and redefine to cooking oil and bio-diesel. From previous research, pure crude palm oil also can be used in diesel engine. Unfortunately, it will cause clogging on the fuel line because pure crude palm oil has very high viscosity. The research is to know the effect of the characteristics of crude palm oil using centrifugation technique at 14000 RPM. These characteristics then will compare with diesel fuel characteristics according to Malaysia Standard (MS 123). The experiment to identified palm oil characteristics is done in December 2009 to March 2010. From the experiment it were shows that only viscosity will effect from centrifugation process where kinematic viscosity decreasing from 64.0593cst of pure CPO to 40.5153cst for the centrifugation of 14000 RPM speed at room temperature 27⁰C. While others characteristics that also being test like density, flash point, and energy contain remain constant. Viscosity shows decreasing trend due to rising of the temperature while separation between olein and streian increased.

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CHAPTER 1

INTRODUCTION

1.1 Background

Oil palm (*Elaeis guineensis*) is grown extensively in Southeast Asia and Equatorial Africa and it produces more oil per area than any other plant (Poku, 2002). There are two types of oil that can be obtained from the oil palm: palm oil from the flesh of the fruit (mesocarp), and palm kernel oil from the seed or kernel. The unripe fruits contain very little oil but the mesocarp of ripe fruits has an oil content of 70–75% of its total weight. Palm oil production in Malaysia is one of the highest among the producing countries and this is attributed to the climate and good management arising from R&D (Basiron & Chan, 2004) [1].

Palm oil is one of the main commodities in Malaysia and Indonesia that gives high significant contributions to their national incomes. Both two countries are the biggest producers and exporters of crude palm oil (CPO) in the world. Malaysia produces 15.9 million tonnes of CPO in 2006 (Malaysian Palm Oil Board, 2008), followed by Indonesia that produces 15.8 million tonnes in that year. The total exports of crude palm oil from Malaysia is around 14.42 million tonnes in 2006 and 13.74