

Effects of Diethyl Ether Additives on Palm Biodiesel Fuel Characteristics and Low Temperature Flow Properties

Obed M. Ali^{a,c}, Rizalman Mamat^a and Che Ku M. Faizal^b

^aFaculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600, Pekan, Pahang, Malaysia

^bFaculty of Chemical Engineering and Natural Resource, University Malaysia Pahang, 26300, Gambang, Pahang, Malaysia

^cHaweja Technical Institute, Foundation of Technical Education, Kirkuk, Iraq

ABSTRACT

Diesel engines are widely used in almost all walks of life and cannot be dispensed with in the near future. As the fossil fuels now mainly used in diesel engine and continually depleting accompanied by increasing consumption and prices day by day, there is a need to find out an alternative fuel to fulfill the energy demand of the world. Alternative fuels like biodiesel, are being used as an effective alternative to diesel. The feasibility of biodiesel production from palm oil was investigated with respect to its fuel properties. Though biodiesel can replace diesel satisfactorily, problems related to fuel properties persist. In this study an oxygenated additive diethyl ether (DEE) was blended with palm oil biodiesel (POME) in the ratios of 2%, 4%, 6% and 8% and tested for their properties improvement. These blends were tested for energy content and various fuel properties according to ASTM standards. Qualifying of the effect of additive on palm biodiesel fuel properties can serve the researchers who work on biodiesel fuels to indicate the fuel suitability for diesel engines according to fuel standards. Blends of DEE in POME resulted in an improvement in acid value, viscosity, density and pour point with increasing content of DEE, accompanied by a slight decrease in energy content of biodiesel

KEYWORDS: Palm biodiesel, Diethyl Ether, Energy Continent, Diesel, Fuel properties