UNIVERSITI TEKNOLOGI MARA
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# TITLE: TRANSESTERIFICATION OF FATTY ACID METHYL ESTER USING KOH AQUEOUS CATALYSTS

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# ABSTRACT

Biodiesel (FAME) is more oxygenated than typical mineral diesel, resulting in more efficient combustion in the engine and lower hydrocarbon, carbon dioxide, and particle emissions. FAME produced via transesterification of used cooking oil with methanol in the presence of a homogenous base catalyst (KOH). In the field of biofuels, the generation of biodiesel by the transesterification process has been the subject of extensive research. It has been discovered that homogenous catalysts, such as sodium hydroxide and potassium hydroxide, are particularly effective at catalysing the conversion of vegetable oil or animal fat into esters, the primary component of biodiesel. The nature of alcohol and alcohol to oil molar ratio plays an important role on the method of biodiesel production. As a result, this paper examined different alcohols commonly used to produce biodiesel fuel with more emphasis on methanol and ethanol. Further the different alcohol to oil molar ratios used to produce biodiesel have been extensively discussed and reported (Musa, 2017). The oil-to-alcohol molar ratio fluctuated between 6:1 and 3:1. (1 referred as oil). The study discovered that a higher molar ratio of oil to alcohol resulted in a greater biodiesel production. It was also discovered that potassium hydroxide produced a greater yield of biodiesel than sodium hydroxide. In addition, the reaction time was reduced when potassium hydroxide was used as a catalyst. The variables that were tested in this investigation were two distinct methanol to oil ratios (6:1 and 3:1), a catalyst loading that ranged from 1 weight percent to 2 weight percent, and two distinct reaction times (1 hour and 30 minutes). Both the temperature of the reaction, which was kept at 60 degrees Celsius, and the alcohol that was employed, which was methanol, were maintained at the same level throughout. The objective of this experiment to determine the effect of homogeneous base catalyst, methanol to oil ratio, catalyst loading and reaction time on yield production of biodiesel

# TABLE OF CONTENTS