World Academy of Science, Engineering and Technology
International Journal of Energy and Environmental Engineering
Vol:10, No:12, 2016

Synthesis of Biolubricant Base Stock from Palm Methyl Ester

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Abstract : The use of biolubricant has gained its popularity over the last decade. Base stock produced using methyl ester and trimethylolethane (TME) can be potentially used for biolubricant production due to its biodegradability, non-toxicity and good thermal stability. The synthesis of biolubricant base stock e.g. triester (TE) via transesterification of palm methyl ester and TME in the presence of sodium methoxide as the catalyst was conducted. Factors influencing the reaction conditions were investigated including reaction time, temperature and pressure. The palm-based biolubricant base stock produced was analysed for its monoester (ME), diester (DE) and TE contents using gas chromatography as well as its lubricating properties such as viscosity, viscosity index, oxidation stability, and density. The resulting base stock containing 90 wt% TE was successfully synthesized.

Keywords : biolubricant, methyl ester, triester transesterification, lubricating properties
Conference Title : ICBBBB 2016 : International Conference on Biomass, Bioenergy, Biofuels and Bioproducts
Conference Location : Penang, Malaysia
Conference Dates : December 01-02, 2016