

The Effect of Oxidation Stability Improvement in Calophyllum Inophyllum Palm Oil Methyl Ester Production

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Abstract : Oxidation stability of biodiesel is very important in fuel handling especially for remote location of biodiesel application. Variety of feedstocks and biodiesel production process resulted many variation of biodiesel oxidation stability. The current study relates to investigation of the impact of fatty acid composition that caused by natural and production process of calophyllum inophyllum palm oil methyl ester that correlated with improvement of biodiesel oxidation stability. Firstly, biodiesel was produced from crude oil of palm oil, calophyllum inophyllum and mixing of calophyllum inophyllum and palm oil. The production process of calophyllum inophyllum palm oil methyl ester (CIPOME) was divided by including washing process and without washing. Secondly, the oxidation stability was measured from the palm oil methyl ester (POME), calophyllum inophyllum methyl ester (CIME), CIPOME with washing process and CIPOME without washing process. Then, in order to find the differences of fatty acid compositions all of the biodiesels were measured by gas chromatography analysis. It was found that mixing calophyllum inophyllum into palm oil increased the oxidation stability. Washing process influenced the CIPOME fatty acid composition, and reduction of washing process during the production process gave significant oxidation stability number of CIPOME (38 h to 114 h).

Keywords : biodiesel, oxidation stability, calophyllum inophyllum, water content

Conference Title : ICREE 2015 : International Conference on Renewable Energy and Environment

Conference Location : Penang, Malaysia

Conference Dates : December 03-04, 2015