THE PRODUCTION OF BIODIESEL FROM AVOCADO SEED OIL (Persea americana Mill) USING CATALYST FROM EGG SHELL

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ABSTRACT

Petroleum fuel is a main energy source in daily life, however Indonesia's crude oil reserves are decreasing year by year, and predicted to be exhausted if exploited on a large scale. One of the methods to reduce the use of fuel is by using alternative fuel, namely biodiesel. Biodiesel is an alternative fuel made from vegetable and animal materials. One of the exemple of vegetable material is avocado seed. Avocado seeds go through a pressing and degumming process. Degumming process is done to remove the sap using phosphoric acid. In making biodiesel catalyst are needed to accelerate the reaction rate. The catalyst used is a heterogeneous catalyst in the form of CaO from egg shells. The purpose of this study was to find out the impact of CaO catalyst and transesterification time on the yield of biodiesel produced and determine the characteristics of avocado seed biodiesel based on the quality of SNI 7182:2015. This study was design by using Complete Random Design method with 2 2 factorial, namely the amount of catalyst (1%, 3%, 5%) and transesterification time (60 and 90 minutes). The parameters used for biodiesel characteristics are density, viscosity, acid number, calorific value, iodine number, cetane number and methyl ester content (FAME) which are in accordance with SNI 7182:2015. The highest yield is A1B1 (1% catalyst and 60 minutes). The results of quality testing on sample A1B1 were density 937 kg/m3, viscosity 1.6635 cSt, acid number 0.4046 mgNaOH/gr, cetane number 44.78, calorific value 48.564 Mj/kg, the iodine number is 8.05 grams/100gram and the metal ester content is 143.68%.

Keywords : Biodiesel, Avocado Seeds, Egg Shell