

Pembuatan Biodiesel dari Minyak Jelantah Menggunakan Katalis Heterogen Cangkang Keong Sawah (*Pila ampullacea*) (*Production of Biodiesel from Waste Cooking Oil Using Heterogeneous Catalysts of Rice Snail Shells (*Pila ampullacea*)*)

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ABSTRACT

Biodiesel is a fuel that made from vegetable and animal oils. One of the vegetable materials that can be used as raw material is waste cooking oil. This study uses waste cooking oil as raw material for making biodiesel. The high levels of free fatty acids in waste cooking oil must be reduced to prevent the saponification reaction in making the biodiesel. Catalysts are used in the manufacture of biodiesel to accelerate the formation of biodiesel. In this study, the catalyst that used was heterogenous CaO from the calcination process of field snail shells. This study analyzes the effect of temperature and CaO catalyst on the transesterification process, and analyzes the characteristics of biodiesel according to the SNI 7182-2015. Data analysis was performed using CRD (Completely Randomized Design) factorials with 2 factor (temperature and CaO catalyst concentration) with 3 temperature levels (55°C, 60°C, 65°C) and CaO catalyst concentration (4%, 6%, 8%). Biodiesel purification was carried out using the dry washing method from activated charcoal from coconut shell which had been activated using 1M H₃PO₄ and heating process to remove residual water and methanol in biodiesel. The highest yield of biodiesel produced was 91.5%, in T2A2 sample with 60 °C of transesterification and 6% catalyst concentration. The test parameters resulted in a 43.28%-mass of cetane number, 863 Kg/m³ of a density, 3.32 cSt of kinematic viscosity, 0.543% of an acid number, 14.3%-mass of an iodine number and 169.12% of a methyl ester content.

Keywords: *Biodiesel, Field Snail Shells, Transesterification, Waste Cooking oil*