Analysis of the Effect Cocoa Bean Shell Charcoal (Theobroma cacao L.) in the Biodiesel Purification Process on Quality According to SNI 7182: 2015

Dafit Ari Prasetyo, S.T., M.T (*Supervisor Thesis*)

Nanik Handriani
Renewable Energy Engineering Study Program
Department of Engineering

ABSTRACT

Biodiesel is a fuel made from vegetable and animal oils. One of the vegetable oils that can be used as raw material for biodiesel is used cooking oil. biodiesel is used cooking oil. The results of cooking oil biodiesel processing on average does not meet the characteristics that are in accordance with SNI 7182: 2015 standards due to the refining process that has not been maximized. Purification of crude biodiesel requires the help of an adsorbent as an absorber of the remaining impurity compounds. remaining impurity compounds. The purification of crude biodiesel in this study uses the dry washing method with the help of charcoal adsorbent. charcoal that has been activated with 4M HCl. This research This study used a completely randomized design (CRD) with 2 factors and 3 levels, namely the variation of adsorbent mass concentration (K) (5%, 10%, 15%) and temperature variation (T) (55°C, 60°C, 65°C). The results showed that the best biodiesel quality was found in the treatment of variation K1T2 (5% w/b, 60°C) with characterization results that meet SNI 7182:2015 standards as follows: 82.48% yield, density 887 Kg/m3, viscosity 2.81 cSt, cetane number 62.50, iodine number 54.15%-mass (gl_2/100g). The results that do not meet the standards based on SNI 7182: 2015 are calorific value of 39.39 MJ/Kg and acid number 2.03 mgKOH/g and methyl ester content 86.14%-mass.

***Keywords**: Biodiesel, Cocoa Bean Shell Charcoal, Crude Biodiesel Purification, Waste Cooking Oil*