The Utilization of Sawdust Charcoal and Durian Skin Charcoal as a Bioadsorbent in Palm Oil Purification

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Abstract. Palm oil products as a food ingredient and cooking oil have two quality aspects. The first aspect relates to levels, quality of fatty acids, moisture and levels of impurities. The second aspect relates to the taste, aroma, clarity and purity of the product. The purpose of this study was to analyze the ability of activated charcoal from durian peels and sawdust to reduce levels of Peroxide Number and Free Fatty Acids in palm oil. This research was conducted by utilizing teak wood powder charcoal and durian skin charcoal as bioadsorbents produced from the pyrolysis process. The research started from the carbonization process at 500oC for 2 hours and continued with activation for 18 hours using concentrated HCl solution, the adsorption process was carried out by exposing activated carbon with CPO using variations in particle size, mass and contact time to determine the optimum conditions in the adsorption process. Carried out on activated carbon with sizes of 100,140, and 200 mesh. Furthermore, the results of the adsorption process are filtered and then analyzed the acid number, decreased peroxide number) and analysis of β carotene contained in palm oil. The results of this study indicate that the mass ratio and size bioadsorbents of sawdust: durian peel bioadsorbent obtained the optimum mass ratio in reducing Free Fatty Acids is 100 mesh a mass ratio 1:7 as big as 1.61%, PV is 140 mesh a mass ration 1:5 as big as 0.594 meq / Kg, water content is 200 mesh a mass ration 1:1 as big as 0.09% and β Carotene, namely at a mass ratio of 140 mesh 1:5 as big as 601,13 ppm at 90 minutes.

Keyword: charcoal, purification, crude palm oil, free fatty acids, mass ratio