



ABSTRACT

Banana fruits contain banana peels that are typically removed and are thrown away. Others use them as fertilizers, but most of the time they are considered as waste and are left to rot. Because of this, the researchers tried to figure out possible ways to reduce banana peel wastes and to find alternative uses for banana peels. By performing researches, they discovered that banana peels may undergo several processes in order to become activated carbon. These activated carbons may serve as a replacement for the chemicals usually used in water and air filtration. In this study, the banana peels were dried and cut into small pieces. Then, they underwent carbonization inside a rotating vessel. During this process, moisture was removed from the banana peels and indirect heat was applied to the rotating vessel. Also, steam was used as a catalyst for the activation process. Once the activated carbon was produced, it was tested in a laboratory. The objective of this study was to develop a batch type carbonizing equipment using banana peels as raw materials for the production of activated carbon. The carbonizing equipment was designed and fabricated by integrating the processes necessary in order to produce activated carbon. Following the completion of the fabrication and assembly of the equipment, the researchers conducted a series of trial runs in order to produce activated carbon at different time intervals. The samples were then tested in a laboratory to determine their pore size structure. The carbonizing equipment was able to produce activated carbon with pore size under the range of macropores and within a minimum time of 2 hours. The pore sizes were dependent on the length of carbonization exposure since the pore size of the samples increased significantly as the time increased.

Keywords: Carbonization, Indirect heat, Steam, Activated Carbon, Pore size