

**Preparation and Testing of Activated Carbon Made From Local Palm
Kernel Shells for Water Filtration**

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Abstract

The charred palm kernel shells (14.5Kg) obtained from a merchant in Abeokuta were crushed into smaller pieces, carbonized at 500°C, quenched in different water medium, pulverized, then activated at a temperature range of 800°C and 900°C, in different steam medium. The dried samples were sieved into two particle size ranges making a total of twenty four specimens from the prepared twelve samples. Then the colour removal capacity of each sample was tested with methylene blue and three samples with the best results were selected for further tests to determine the odour adsorptive capacity of each sample in terms of iodine activity and acetic acid adsorption to determine the corresponding surface area of each sample. Results show that sample of activated carbon with size range 0.425 mm – 1.18 mm diameter carbonized and activated at temperature range 500°C and 800°C, quenched and activated in alkaline medium has the best performance in terms of iodine activity, odour removal and acetic acid adsorption. Activated carbon prepared under ordinary water condition has the least performance. However, each sample has better adsorptive capacity when carbonized and activated at temperature range 500°C and 800°C than those prepared at 600°C and 900°C. The remaining charred palm kernel shells were used to preparing more of the sample with the best performance. Then 3258 mill litre of the sample was used in pilot scale adsorption test to assess its effectiveness as a filter medium and adsorption unit in water treatment.