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A COMPARISON STUDY OF WATER FILTERING MATERIALS MADE FROM EXTRACTED PALM FRUIT FIBRE AND PALM KERNEL SHELL

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Abstract

The use of activated carbon as filter media for water has gained research attractions over the years. A comparison study of granular activated carbon (GAC) of extracted palm fruit fibres (EPF), palm kernel shell (PKS) with existing filter material (EFM) commercially produced activated carbon for water filtration has been conducted. Palm kernel shells and extracted palm fruit fibres from palm oil mill wastes were processed to form activated carbon by chemical activation process. Scanning Electron Microscopy (SEM) was used to obtain the magnified images of GAC–EFM, GAC – EPF and GAC–PKS. The turbidity, pH level, total solid suspended and chemical oxygen demand of water filtrates from tap and rain obtained from the three filters were analysed. Turbidity level was least for GAC – EPF with value of 0.68 NTU and 0.32 NTU compared to GAC–PKS (0.79 NTU & 0.65 NTU) and GAC–EFM (0.84 NTU and 0.44 NTU) for rain and tap water respectively. The Chemical Oxygen Demand (COD) after filtration process were 27 mg/L, 34mg/L and 1mg/L for GAC–EFM, GAC–PKS and GAC–EPF respectively. The results show that GAC–EPF yielded an optimum performance in balancing the pH level, reducing turbidity, reducing suspended solid and chemical oxygen in water.

Key words: activated carbon, palm fruit fibre, palm kernel shell, water filter

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