

**ADSORPTION OF REACTIVE RED 120 BY ULTRASONIC ASSISTED-
PHOSPHORIC ACID (H₃PO₄) ACTIVATED CARBON FROM ARECA
CATECHU HUSK**

SITI NUR NAJWA BINTI ARMAN

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Mohd Fauzi bin Abdullah
Supervisor
B. Sc. (Hons.) Applied Science
Faculty of Applied Sciences
Universiti Teknologi MARA
02600 Arau
Perlis

Dr Siti Nurlia binti Ali
Project Coordinator
B. Sc. (Hons) Applied Chemistry
Faculty of Applied Science
Universiti Teknologi MARA
02600 Arau
Perlis

Dr. Nur Nasulhah binti Kasim
Head of Programme
B. Sc.(Hons.) Applied Chemistry
Faculty of Applied Science
Universiti Teknologi MARA
02600 Arau
Perlis

Date : August 2023

ABSTRACT

ADSORPTION OF REACTIVE RED 120 BY ULTRASONIC ASSISTED- PHOSPHORIC ACID (H₃PO₄) ACTIVATED CARBON FROM ARECA CATECHU HUSK

Reactive red 120 is one of the dyes that is frequently used in textile industry, due to its high level of chemical, biological and photocatalytic stability. The dye waste is produced during textile finishing process subsequently released directly to water bodies which giving harmful effects to the environment due to the carcinogenic characteristic. The adsorption process becomes an effective treatment to treat textile dye. In this research, ultrasonic assisted-H₃PO₄ activation is used to produce activated carbon from Areca Catechu husk. Ultrasonic-assisted chemical activation synthesize the activated carbon (AC) with a high specific surface area and high porosity. Activated carbon from Areca Catechu husk was evaluated for its ability to remove reactive red 120 dye from aqueous solution. A thorough characteristics study of Areca Catechu husk on reactive red 120 dye was carried out. The characterization of activated carbon from Areca Catechu husk was evaluated by Fourier Transform Infrared (FTIR) analysis, pH_{pzc} analysis, iodine test, ash content and bulk density analysis. The result from analysis showed that this activated carbon has higher iodine number, low ash content and low bulk density analysis, thus this activated carbon is very suitable for adsorption applications. The performance of the activated carbon was carried out in various adsorption parameter such as adsorbent dosage, contact time and concentration on the adsorption of reactive red 120. Results showed that the optimum value of adsorbent dosage was 0.4g, which gives 99.78% of reactive red 120 colour removal at 100 mg/L within 60 minutes and the optimum value of contact time is 210 minutes, which give 99.77% of reactive red 120 colour removal at 100 mg/L. Therefore, it was shown that Areca Catechu husk is an excellent potential source of activated carbon, and its use in the production of activated carbon contributes to the resolution of pollution problems by decolorizing coloured textile effluent.

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