

THE REMOVAL OF IRON (II) FROM AQUEOUS SOLUTION  
BY SAWDUST ADSORPTION

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# THE REMOVAL OF IRON (II) FROM AQUEOUS SOLUTION BY SAWDUST ADSORPTION

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## LIST OF ABBREVIATION

### Abbreviations

AAS	Atomic Absorption Spectrometer
Fe (II)	Iron (II)
nm	Nano meter
ppm	Part per million
SD	Untreated Sawdust
SDC	Acid Sulphuric Treated Sawdust
UPEN	Economical Strategy Units of Terengganu
$\mu\text{m}$	Micro meter

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## ABSTRACT

Sawdust, a relatively abundant and which always present a disposal problems is currently being investigated as an adsorbent to remove chemical substances including heavy metals from waste water, dyes, oil and toxic salts. This research investigates the potential use of sawdust; either untreated or pretreated sawdust in the removal of Iron (II). The adsorption phenomenon of sawdust has been carried out using both batch and column test. The Langmuir and Freundlich isotherm were used to observe sorption phenomena of sawdust in the removal of Iron (II). The results found that the sawdust was capable in removing Iron (II) in aqueous solution. The results also showed that Langmuir isotherm was found well fitted into the experimental data as compared to the Freundlich isotherm. It was found that, chemisorptions and physisorption were the prime mechanism for the process of adsorption to occur between the sawdust and Iron (II). The results also proved that the treated sawdust is better than that of untreated sawdust as an adsorbent for Iron (II).

## ABSTRAK

Habuk kayu gergaji antara sisa kayu yang boleh didapati dengan banyaknya dan juga menimbulkan permasalahan bagi proses pelupusannya dipercayai mempunyai keupayaan sebagai bahan penjerap untuk menyingkirkan bahan kimia seperti logam berat dalam air sisa, pewarna, minyak dan garam toksik. Penyelidikan ini adalah untuk mengkaji tentang potensi habuk kayu gergaji samada dirawat atau tidak dalam penyingkiran Ferum (II). Fenomena penjerapan oleh habuk kayu dikenalpasti dengan menjalankan ujian berkelompok dan ujian turus. Isotherma Langmuir dan isotherma Freundlich digunakan untuk menentukan mekanisma penjerapan yang berlaku dalam penyingkiran Ferum (II). Keputusan menunjukkan habuk kayu gergaji mampu menyingkirkan Ferum (II) dalam larutan akues. Keputusan juga menunjukkan isotherma Langmuir lebih baik berbanding isotherma Freundlich kerana hampir menyamai data kajian. Didapati bahawa penjerapan kimia dan penjerapan fizikal merupakan mekanisme utama berlakunya proses penjerapan antara habuk kayu gergaji dan Ferum (II). Keputusan juga membuktikan bahawa habuk kayu gergaji yang dirawat bertindak lebih baik daripada habuk kayu gergaji tidak dirawat sebagai bahan penjerap bagi Ferum (II).