

**A STUDY ON ACOUSTIC EMISSION OF
STEEL FIBRE CONCRETE CONTAINING
RHA AS PARTIALLY CEMENT
REPLACEMENT**

SITI ZUBAIDAH BINTI BIBIT

**Bachelor of Engineering (Hons) Civil
(Infrastructure)
UNIVERSITI TEKNOLOGI MARA
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DECLARATION BY THE CANDIDATE

I declare that the work in this thesis was carried out in accordance with the regulation of University Technology Mara. It is original and is the result of my own work, unless otherwise indicated or acknowledged as reference work. This topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the academic rules and regulation for under graduate, university technology mara, regulating the conduct of my study and research.

Name : Siti Zubaidah Binti Bibit
Candidate I.D No : 2015896728
Programme : Bachelor of Engineering (Hons) Civil (Infrastructure)
Faculty : Civil Engineering
Thesis Title : A Study on Acoustic Emission Of Steel Fiber Concrete
Containing RHA As Partially Cement Replacement

Signature Of Student :

Date :

ABSTRACT

There has been a tremendous increase in the use of mineral admixture by industries during the late 20th century and the rate is expected to increase. Concrete is an artificial material, which is made up of cement, fine aggregates, coarse aggregates and water. The increasing demand for cement and concrete is met by the partial cement replacement by addition of supplementary cementing materials which leads to several improvements in the concrete composites and to the overall economy. This paper describes the acoustic emissions (AE) characteristics of steel fibre concrete containing black rice husk ash (BRHA) and white rice husk ash (WRHA) as partially cement replacement. The rice husk ash (RHA) was added to concrete as it is a good pozzolanic material. It can be applied for various applications such as infrastructure elements. Therefore, this study addressed three aims. Firstly is to identify the workability of the steel fibre concrete containing WRHA and BRHA as partially cement replacement at certain dosage levels based on cement weight. Secondly, is to compare the compressive strength of steel fibre concrete containing WRHA and BRHA at the age of 7, 14 and 28 days. Lastly, is to propose a new characteristic of steel fibre concrete containing WRHA and BRHA as partially cement replacement using acoustic signal strength at 7, 14 and 28 days. A total of 54 cubes were compressed in conjunction with AE technique. Three dosage levels of RHA were prepared namely 0 %, 5% and 10 % of RHA with 1 % of steel fibre in the concrete mix. The dosages levels were prepared for both BRHA and WRHAs. The data was recorded to compare the effect between white and BRHA in the steel fibre concrete. Then, the AE characteristics were identified. It is found that concrete with WRHA has higher compressive and higher signal strength than BRHA.

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