CHARACTERIZATION OF POFA AS INFILLED MATERIAL IN HOLLOW CONCRETE USING ACOUSTIC EMISSION APPROACH

By

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced 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 Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Sands have become a world crisis due to its high demand in construction industry. The used of sand need to be reduced to sustain the environment. In this study, the natural waste material which is POFA had been used as partial sand replacement and also it can avoid the environmental pollutant. Therefore, this work presents the results of laboratory test carried out POFA as a partial replacement for sand in infilled material production. Concrete cubes are cast and test at curing aging 3, 7 and 28 days using 10% replacement.The strength of the infilled material was being obtained by conducting compression strength test. Other than that, this study also to propose a new characteristic of hollow concrete infilled with mortar containing 0% and 10% POFA as partial sand replacement using compressive strength and acoustic emission technique. Test results showed that the infilled materials containing 10% POFA manage to achieve the target strength which is 30 N/mm^2. As for AE results, the characteristic for this sample is found that the maximum signal strength achieved by concrete infilled with 10% of POFA is 1160000 eu which higher than concrete infilled with 0% of POFA which is 436000 eu. Findings of this study are expected to give a better understanding of the use of POFA in infilled materials. Furthermore, application of acoustic emission testing also is capable to predict forthcoming of cracks in the specimen earlier than detection by visually inspection.

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