

MALAYSIA NATURAL FIBRES FOR DIVERSED BIO-BASED APPLICATION

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Malaysian Coir Fibre for Acoustical Absorption Cement Composite Panel

Zuraida Ahmad, Hadi Purwanto, Farrah Yussof

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- *Introduction*
- *Materials*
- *Mix preparation*
- *Mixing, casting and curing of the composites concrete*
- *Testing Procedure*
- *Results and Discussion*
- *Conclusion*
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Summary:

This chapter reports a study on the use of Malaysian coir fibre in the production of coir fibre-albumen cement composites (CFACC) to enhance the acoustical properties of panels. The investigations include the optimization of parameters as coir fibre loading, thickness of the composites as well as the frequencies used for testing of acoustical absorption behavior. The sound absorption was improved with the addition of the coir fibre up to 3 wt%. Further increment of the fibre reduced this property. Higher frequency and thicker panels used for sound absorption testing also lead to higher sound absorbing capacities. This study also shows that CFACC proved to have good acoustical properties compared to conventional concrete.

Introduction

The development of conventional cement composites can be traced back to the Egyptians and Roman, in which they were used for masonry construction. The vast development of this type of composites can be attributed to its relatively affordable price and uncomplicated processing steps. The rapid development and infrastructural technology however, had attracted the people for environmental friendly materials with much better performance than concrete. Nowadays, scientists around the world have also been searching for alternative cement composites that can provide better sound absorbing properties than the conventional concrete (Aziz et al., 1981, Aggarwal and Singh, 1990, Khedari et al., 2003, Agopyan et al., 2005). The main reason behind this is because the conventional concrete is found to be a good sound barrier, but poor sound absorber as it reflects about 97 % of the sound striking it due to its dense structure. Thus with the worsening noise pollution around the globe the search for alternative lighter materials with better sound absorbing properties is of great importance.

Natural fibres have been considered as promising reinforcing material in cement based composite because of its abundant availability, relatively low cost, low energy consumption and their impending potential as material of choice for construction purposes. The initiative in adding