

A preliminary study of sound absorption using multi-layer coconut coir fibers

ABSTRACT

Acoustic treatment using absorbing materials are widely used to reduce reverberation properties of closed spaces and to increase the transmission loss properties of multi-layer sound absorption panels. Natural fibers such as coconut coir fiber have high potential to be used as acoustic materials. As the natural fibers are agriculture waste, manufacturing natural product is therefore an economic and interesting option. This paper discusses the sound absorption using multi-layer coconut fiber as absorbing material component. The effect of microperforated plate and airspaces layers towards the sound absorption of the multi-layer construction was also investigated in this paper. Acoustic absorption coefficient is the main parameter to be estimated in this research. Computer simulation using WinFLAGTM program was done to calculate the acoustic absorption coefficients. Simulation indicated that multi-layer coconut coir fibers and airspaces could increase the acoustic absorption coefficient. All simulation results obtained are based on diffused sound incidence situation.