Investigation of noise reduction coefficient of organic material as indoor noise reduction panel

Abstract

Noise can cause a few types of effect to human health especially in hearing like hearing loss. Indoor noise pollution comes from many sources and places. The research focuses on the sound reduction wall surface material rather than any techniques available and using organic material like coconut coir fiber, rice husk and sawdust. These sound reduction material is suitable to apply as interior lining for homes and offices. This research conducted to compare the efficiency of coconut coir fiber, rice husk and sawdust as indoor noise reduction, to evaluate the effectiveness indoor noise level by using wall surface sound reducer material and to determine the best material that will reduce noise level. In preparation of board panel, two binders were used which is polyester resin and hardening catalyst, cement and sand. For board panel using binder of polyester resin and hardening catalyst, the binders were stirred for two minutes. Then, the mixture of polyester resin, hardening catalyst with raw material was mix uniformly. The suppression done for 24 hours in order to obtain a composite outcome that is denser. Then, the ratio for coconut coir fiber, cement and sand is 1. 5:0. 5:0. 5, the same ratio used for sawdust and rice husk and the Noise Reduction Coefficient (NRC) will be determined. The parameter use to determine the NRC and the sound transmission are the frequency, speaker intensity and the distance from the speaker. If not absorbed, the sound can be reflected and this will prevent sound dispersed to other space. The results show rice husk is better with cement binder and sand, while for polyester resin and hardening catalyst binder, sawdust is the best. Therefore, currently organic materials present good alternative to synthetic material providing good health with green environment as well as enhancing natural agricultural and growth.