

**A STUDY ON
CHARACTERIZATION OF SOUND
ABSORPTION PROPERTIES OF LOCALLY
AVAILABLE ABSORPTION MATERIALS**

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Abstract

Noise pollution is regarded as a potential environmental and occupational hazard and public nuisance. Excessive noise can cause fatigue, lower efficiency and productivity, impaired speech communication and hearing loss in an exposed individual. Noise is considered as one of the important factors in the evaluation of environmental friendly nature and occupational safety.

There is an increasing demand for industrialists to ensure that the noise pollution caused by their industry s within the permissible levels. There are two basic methods employed in controlling the noise in a source.

Controlling or attenuating noise as its on the source

Controlling or attenuating noise along its path from source to listener

In the first method the noise source should be selected, redesigned on modified to operate in more quality. It needs good engineering knowledge about the source characteristics. Normally, this can be done at the manufacturing stage but modification of noise sources after installation is minimum.

In the second method, noise is attenuated along its path from source to listener. This is the most common method in controlling the excessive noise generated from the various sources. Normally noise attenuation is a combination of noise absorption and insulation. Most acoustical materials absorb sound by converting acoustical energy

into heat due to air friction in the cells or passage of the material. Soft fibrous or flexible from materials are typically good sound absorbers. The amount of the absorption of a material is given by the absorption coefficient (α), which vary with the frequency. Glass wool, rock wool, mineral fiberboard and form material are commonly used for the attenuating activities in the world today. But, these materials are mainly artificial based and some material such as glass wool is a health hazard to the human beings.

Therefore, this study was focused to find the environmental friendly products with the good sound absorption properties as same as glass wool. Core fibre is the nature-based product, which is taken from the coconut husk. These fibers are used to prepare coir mats for various purposes and they were used in this study to measure the sound absorption coefficient

Normal sound absorption coefficient was measured by varying the density and the thickness of the coir fiber mat samples and its different preparation forms. The result of the study shows that the absorption efficiency increases with the increase of the density and the thickness of the material. Also, sandwich samples with the layers of different density show good absorption efficiency than the single layer