

**DETERMINATION ON SOUND TRANSMISSION LOSS OF SOUND  
INSULATION MATERIAL**

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## **ABSTRACTS**

### **SOUND TRANSMISSION LOSS ON SELECTED SOUND INSULATION MATERIALS**

This study has three major purposes which are to design an acoustic box, to determine the measurement error of the acoustic box based on a standard sample and to determine the sound transmission loss of selected sound insulation material. Generally, the sound transmission loss is a measure of sound insulating material's properties by transferring the sound energy through a barrier from one medium to another. Sound transmission loss is investigated based on selected sound insulation materials which are medium density fiberboard, polyurethane foam, and gypsum board. In addition, these materials are selected based on their availability in the market. In the first part, the acoustic box is designed by using the medium density fiberboard and polyurethane foam is used to insulate the box. Then, sound intensity formula is applied to determine the value of sound transmission loss obtained from the recorded sound decibels by using sound decibel meter. The measurement of sound transmission loss is based on three different frequencies range at 2000 Hz, 3000 Hz and 4000 Hz which selected due to the sensitivity on human ears where thickness of selected sound insulation materials is uniform. In the second part, the polyurethane foam is used as a standard sample by using the impedance tube as a reference value of sound transmission loss. The measurement error of the acoustic box is determined by the correction factor for the sound transmission loss of standard sample to determine the corrected value of sound transmission loss of each selected material that should be obtained from the acoustic box. In conclusion, polyurethane foam has a very poor performance of sound transmission loss compared to medium density fiberboard and gypsum board respectively. For recommendation, the acoustic box can be enhanced by using the partition and the sample can be tested by using different thicknesses.

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