

Analysis of Sound Absorption Coefficient

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Abstract : This research was conducted to analyze the absorption coefficients of sound at several types of materials as well as its combinations. The aim of this research was to find the value of sound absorption coefficients on the materials and its combinations. The materials used in this research were gypsum panel, gypsum-fibre palm, fibre palm-gypsum, and foamed concrete-fibre palm. The test was conducted by using a method of reverberation chamber based on the ISO 354-1985 with the types of the sound source: white noise and pink noise at the frequency of 125 Hz - 8000 Hz. Based on the test results of white noise, it was found that the panel of gypsum-fibre palm has $\alpha = 0.93$ at low frequency; the panel of fibre palm has $\alpha = 0.97$ at a medium frequency; and the panel of foamed concrete-fibre palm has $\alpha = 0.89$ at high frequency. Further, for the sound source of pink noise, it was found that the panel of gypsum-fibre palm has $\alpha = 0.99$ at low level; the panel of fibre palm-gypsum has $\alpha = 0.86$ at medium level; and the panel of fibre palm-gypsum has $\alpha = 0.64$ at high level. The fibre palm panel could absorb the sounds well since this material has bigger airspace (pore) than the foamed concrete and gypsum. Consequently, when the sounds wave enters to this material it will be trapped in the space. The panel of fibre palm affected an increasing of sound absorption coefficient value at the combination materials when the panel of fibre palm was placed under another panel. However, the absorption coefficient values of both fibre palm and fibre palm-gypsum panels are about the same.

Keywords : coefficient of sound absorption, pink noise, white noise, palm

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