

Prototype of Utilizing Coconut Fiber Waste as Automotive Cabin Sound Dampener

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ABSTRACT

Noise is one of the disturbances or sources of discomfort, both in residential environments as dwellings, work environments, and inside vehicles. Some natural fiber materials can be used as sound dampeners, including coconut fibers due to their lignocellulosic content. This research was conducted through microphotography testing and sound absorption testing using a decibel meter, with asphalt sound dampener as a comparison to the coconut fiber sound dampener. In the conducted study, there were three samples to be tested: coconut fiber sound dampener with parallel matrix pattern, coconut fiber sound dampener with cross matrix pattern, and asphalt sound dampener. Based on the provided absorption testing results, it is evident that coconut fiber with a parallel matrix pattern has a higher absorption coefficient value, specifically 11,1 dB, compared to the coconut fiber with a cross matrix pattern which has a coefficient of 10,5 dB, and the asphalt dampener with 3,4 dB. The difference in density between the asphalt dampener and coconut fiber is influenced by the variation in mass between the two. Asphalt dampener has a higher density compared to coconut fiber, which has a long and hollow structure, capable of reducing the frequency level of noise. This study demonstrates that utilizing coconut fiber as a sound dampening material provides an effective ability to reduce noise levels within vehicle cabins or other spaces.

Key words : *Noise, Natural Fiber, Sound Dampener, Coconut Fiber*