ACOUSTICAL EVALUATION OF CARBONIZED AND ACTIVATED COTTON NONWOVENS

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Abstract

The process of manufacturing a carbonized and activated nonwoven made by cotton fiber was investigated in this paper. The study was focused on the acoustic application and nonwoven composites with cotton nonwoven as a base layer and glass fiber nonwoven, cotton nonwoven, and carbonized and activated cotton nonwoven as surface layers were produced. Their noise absorption coefficients and sound transmission loss were measured using the Brüel & Kjær impedance tube instrument. Statistical significance of the differences between the composites was tested using the method of Duncan's grouping. The study concluded that the activated carbon cotton fiber composite exhibited an excellent ability to absorb normal incidence sound waves than glass fiber and the cotton carbonization and activation improved sound absorption ability significantly. The analysis of sound transmission loss revealed that although there was no much difference between three surface layers, it still obeyed the mass law that the cotton with greatest density showed slightly better sound insulation than glass fiber and activated carbon cotton.