

Investigation of Thermal and Acoustic Properties of Recycled Felts

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Abstract

The acoustics industry has been using recycled, by-product and renewable materials for decades. The intelligent use of felt materials has not only reduced the materials that need to be disposed of, but also the resource cost to the environment for the production of vehicle acoustic components. Fiber felt technologies have undergone a complete transformation in the last few years. Some of the first products introduced to the automotive market were simple die-cut, needled fiber components with a heavy mass layer added on top and used as noise insulators. In addition to needle die-cut products, air-laid fiber components were also part of the product mix. This led to the introduction of resinous, air-laid materials, HMTA-free resins and the use of recycled epoxy polyester. Other innovations during this time led to the development of lightweight components that replaced the traditional heavy mass layer and decoupler systems found in carpet and dashboard parts. The aim of this study is to reveal and interpret the horizontal incombustibility, acoustic transmission loss and sound absorption coefficient of felt insulation materials used in vehicles. The insulation materials were determined as different contents and components. The relationship between flammability, acoustic transmission loss and sound absorption coefficient was investigated and analyzed.

Keywords

Fiber materials, Automotive acoustics, Non-flammability of felts, Sound absorption, Alpha cabin.