

## Long-Term Structural Behavior of Resilient Materials for Reduction of Floor Impact Sound

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**Abstract :** People's tendency towards living in apartment houses is increasing in a densely populated country. However, some residents living in apartment houses are bothered by noise coming from the houses above. In order to reduce noise pollution, the communities are increasingly imposing a bylaw, including the limitation of floor impact sound, minimum thickness of floors, and floor soundproofing solutions. This research effort focused on the specific long-time deflection of resilient materials in the floor sound insulation systems of apartment houses. The experimental program consisted of testing nine floor sound insulation specimens subjected to sustained load for 45 days. Two main parameters were considered in the experimental investigation: three types of resilient materials and magnitudes of loads. The test results indicated that the structural behavior of the floor sound insulation systems under long-time load was quite different from that the systems under short-time load. The loading period increased the deflection of floor sound insulation systems and the increasing rate of the long-time deflection of the systems with ethylene vinyl acetate was smaller than that of the systems with low density ethylene polystyrene.

**Keywords :** resilient materials, floor sound insulation systems, long-time deflection, sustained load, noise pollution

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