



## **PRACTICAL APPLICATIONS OF FLOATING CONSTRUCTIONS WITH MINERAL WOOL SLABS ON CONCRETE BASE FLOOR FOR TIGHTENED SOUND INSULATION**

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**Abstract.** Impact and airborne sounds penetrating via separating floors between adjoined premises can be defined as the main annoying noise in multi-storey housings as well as in public residential buildings. Lithuanian regulations for acceptable sound insulation performance are stated in building norms STR 2.01.07:2003 [1] under sound classification scheme and are in force since 2004 [2]. Various solutions for a floor (ceiling) construction with different materials were used in order to improve insulation of vertically propagated sounds. It was defined that in new erected buildings the most applicable solution for effective sound insulation is floating floor constructions.

Available standardized calculation methods allows to evaluate airborne and impact sound insulation of floating floor constructions with mineral wool slabs on concrete base floor. Single layer premises vertically separating structure without additionally insulating layer usually is monolithic or hollowed. Concrete base hollowed separating structure using this method can be calculated only roughly. References on laboratory and in-situ measurement results can be used for estimation acoustical performance for this kind of structures. Practical results showed that the airborne and impact sound insulation of just a single layer separating structure depends on mass per unit area and vary partially on material properties and thickness. But any practically acceptable solution of such alone construction cannot ensure minimal acoustic requirements for impact sound.

The paper presents Lithuanian case experience of practical application for sound insulation improvement the floating floor construction comprising a layer of different mineral wool slabs. On site measurements during pre-completion testing demonstrate that achieved levels of sound insulation performance covers C as well as B sound class requirements for dwellings. Load bearing concrete base floor is a typical solution for the new-build and renovated multi-storey buildings and ensure respect to fulfilling protection against noise requirements for separating floors between adjoined premises described in STR 2.01.07:2003.

Comparisons of practical construction works performance against Lithuanian sound classification scheme requirements showed that improvement in impact sound level by additional layer needed is 25–30 dB to satisfy minimum C sound class requirements. Most cost effective and sometimes only easy implemented method comes from optimize floating floor construction. Reinforced concrete ceiling structure with floating on mineral wool plates floors considerably reduces impact and airborne sound insulation. Presented numerous practical airborne and impact sound insulation values for floating floor with different mineral wool elements.

**Keywords:** sound insulation, floating floor, mineral wool.

### **References**

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