



When acoustic insulation is thin...

Impact noise issue

Acoustic insulation: a matter of health

The annoying effects of noise are well known. However people are less aware of the fact that the noise can have direct psychological consequences. Apart from basic loss of concentration, these psychological problems can trigger real health difficulties such as sleep disorders, stress, and anxiety. In severe cases these problems can generate digestive disorders, high irritability and depression.

The noises in buildings are categorised into three families:

- Aerial noises (the source of which is inside or outside)
- Equipment noises (inside the building)
- Impact noises (sound generated by impact and carried through a structure; typically, footsteps, the slamming of a door, etc.)

Impact noises resulting from a shock on elements of a structure which are propagated exclusively by this structure (walls, floors...) like the noise of footsteps, the movement on furnitures, the dropping of objects are very disturbing for the resident of this building.



Causes:

- Conception defects

- Poor choice of floor covering (tiled floor laid directly upon a concrete screed)
- Poor choice of the intermediate insulating layers between carrying elements and the floor (floating floor on a resilient layer with insufficient performance)

- Installation defects

- Sound bridges (puncturing of the resilient under layers with a hard material)

- Renovation issues

- change from resilient floor to hard floor which is less insulating

Acoustic solution for impact noise

A legal requirement

Neighbourhood noise like foot steps, movement of furniture and objects falling on the ground trigger a high number of legal disputes between neighbours or between contractors and architects.

Each government establishes its own regulation imposing a maximum transmitted impact noise level (L'_{nw}). For example, in Europe, the limit values are usually between 53 and 63 dB depending on country concerned.

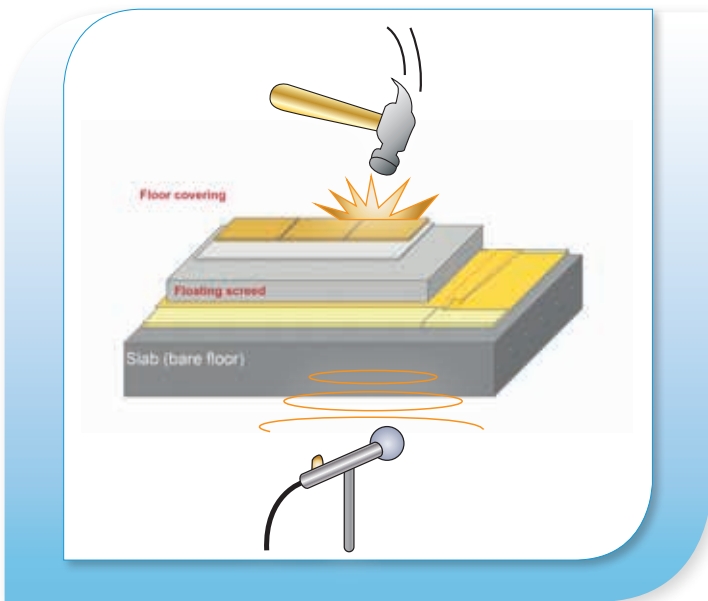
The underlayer separates the concrete slab from the floating floor. It transforms the floor into a mass-spring-mass system avoiding the impact noise transmission. Thanks to a thin layer and less weight, the impact noise insulation increases significantly.



The floating floor system

Impact noise is transmitted by the building structure. The best way for preventing the transmission is to treat the problem at the source. The floating floor system allows you to contain the vibrations in the floor covering you walk on. It involves interposing a sub-layer to uncouple the main structure from the floor covering you walk on.

The thickness of the concrete slab also contributes to the improvement of sound insulation.

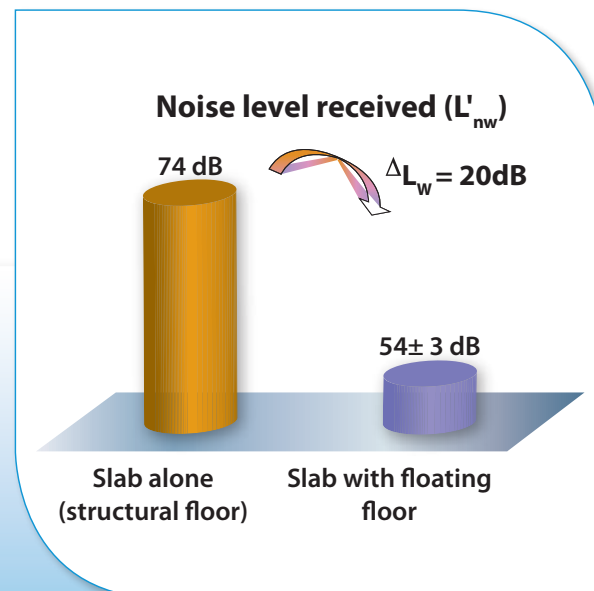


Acoustic performance measurement

The index L'_{nw} is measured in-situ according to the standard ISO 140-7.

The index of performance (ΔL_w) of a floor covering is calculated from laboratory measurement results according to the standard ISO 140-8.

The higher the (ΔL_w) value the better the acoustic improvement of the system.



Acoustic Glass Mat Semi-Finished product

To be used under screed or wooden floor, the acoustic glass mat can be easily laminated with bitumen or any other protective foil. The acoustic glass mats can also be used directly under dry floor construction such as gypsum boards.

Adfors offers a full acoustic mat product range (from 100 to 450 g/m² - in jumbo rolls) allowing you to reach the requirements of your national acoustic regulation.



Thin acoustic glass mats offer a good impact insulation, a high pressure resistance performance and stable acoustic insulation over the years. They are compatible with all heated floor systems. These high quality products come from ADFORS worldwide exclusive technology.

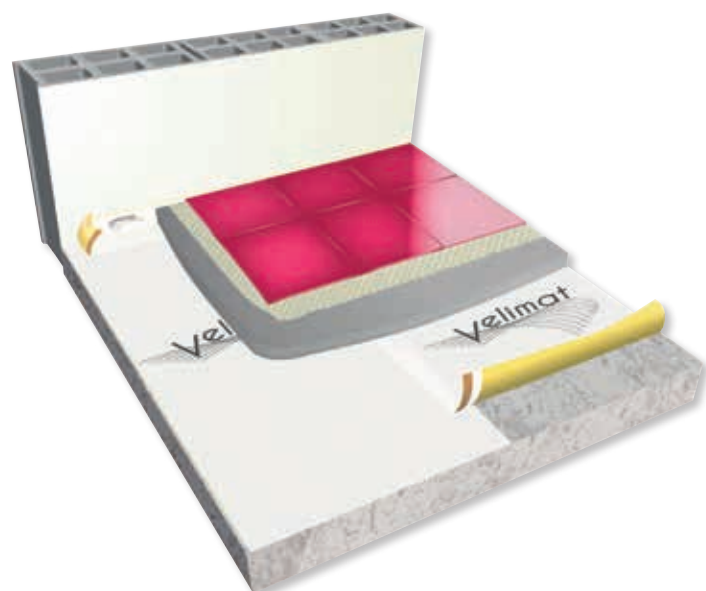
Acoustic glass mat technical data

Material ^b Chemically bounded glass non-woven	LB230Y	LB300Y	LB450Y
Weight	230 g/m ²	300 g/m ²	450 g/m ²
Thickness	2.5 mm	3.0 mm	4.5 mm
Dynamic stiffness (EN 29052-1) - s'_t	[3.5 – 10] MN/m ³	[3.5 – 10] MN/m ³	[3.5 – 10] MN/m ³
Laboratory impact sound insulation ^a (ISO 140-8) - Δl_w	[17 – 24] dB	[19 – 26] dB	[20 – 28] dB

a The acoustic parameters highly depend on the certified laboratories where the measurement is done and on the thickness of screed used during the measurement. This is the reason why a range is given.

b Other types of acoustic mats (weight per m²) are available on request depending on the acoustic performance required.

Velimat[®] - a material ready for immediate use



Velimat[®]

Velimat[®] is made of an acoustic glass mat laminated with two protective polyethylene foils. The upper foil features a sticky edge to connect the layers with each other. It is screed proof and allows you to walk on the acoustic mat without causing any damage during installation. The bottom foil protects the mat from the residual rubbers and avoid acoustic bridges. Velimat[®] is a patented product.



Velimat® - installation steps

Separate the rolls to apply in a clean surface area



Un-wind the layer on the floor (logos on top)



Use the tape to connect the layers



Cover the entire surface



Cover the bottom part of the walls



Apply the floating floor



Velimat® Advantages

- Ready to be installed
- Very thin (< 5 mm)
- Easy to cut
- Easy to handle - Lightweight 12kg/roll
- High, long-lasting acoustic performance
- High, long-lasting pressure resistance
- Heat resistant (compatible with heated floors)
- Sustainable (made of 60 % recycled glass)
- VOC emission under detection level
- Fire resistant (suitable for timber frame construction)
- Tubeless product (less waste in site)
- Easy to transport 19000 m²/truck