Sound Control Guidelines

Technical Bulletin

Background

As residential construction has begun to shift towards multi-family construction, the interest and demand for proper sound control has increased. In fact, the International Building Code (IBC), as well as several states and municipalities, have specific sound reduction requirements for residential and hospitality structures. Since many resilient flooring products, including traditional glue-down LVT products, have minimal sound reduction capabilities, it is not uncommon to augment LVT installations with specific building assemblies, sound control underlayments or attached backings.

With this in mind, there are many things to consider when specifying and constructing flooring and building assemblies that are intended to reduce sound transmission. This technical bulletin serves as a guide for LVT and sound control means and methods, aimed at ensuring they are properly implemented during design and construction.

Sound Control Requirements

Glue Down LVT Products

2DSGN, 2STYL, DAZL, DSGN, MRGE, SNSE, SPRK, STYL

- Sound Control products must be constructed of rubber or foam and fully adhered to the substrate.
- Sound Control products must be 5mm in total thickness or less.

Loose Lay / Clic LVT Products

DSGN Loose Lay, RYME, VRSE

- Sound Control products must be constructed of rubber or foam.
- Sound Control products must be 2mm in total thickness or less.

Acoustical Loose Lay LVT Products

RYME+

- Sound Control products cannot be used with RYME+.

HPC / HDC Products

SMPL, 2STYL HDC, RSRV

- The AcoustiCORK Endurance product is the only approved product for use under these products.

Important Considerations

Most flexible sound control underlayments reduce the indentation resistance of resilient flooring products that are installed over them - some underlayments more than others. Sound control underlayments must be made from rubber (such as recycled/crumb rubber) or a high quality foam. When used with glue down LVT, Sound control underlayments must also be fully adhered to the substrate - this is especially critical for floating floors, as they are subject to natural dimensional changes which could cause issues with sound control products that are not fully adhered. While cork sound control products are commonly used with hardwood flooring materials, cork sound control products should not be used with resilient flooring products, due to concerns regarding deflection and indentation.

Additionally, adhesive selection is critical to ensuring that glue down LVT options stay permanently adhered to sound control underlayments and are able to resist dimensional issues related to temperature changes, sunlight exposure and normal use. Adhesive must be compatible both with the underlayment material and with the flooring material and must be able to resist the ability of either surface to have a deleterious effect on the other. Typically, it is the sound control underlayment manufacturer that is responsible for confirming adhesive compatibility with the substrate, underlayment and LVT product.

Since most sound control underlayments are flexible and compressible by nature, they may be prone to deflection and movement - this can compromise the locking mechanism and/or cause joint separation and gapping for floating floors. For this reason, sound control options for click-and-lock materials are limited. Sound control underlayments are not recommended for use under HPC/HDC products with an attached backing or

loose lay flooring products, with the exception of the AcoustiCORK Endurance product. However, HPC and HDC products have their own, latent sound reduction characteristics that are usually compliant with applicable sound reduction requirements.

Laboratory vs. Reality

Whether due to a specific code or design specification, sound reduction requirements are typically established prior to the selection and installation of finished flooring materials. To confirm performance, it is common for sound testing to be performed in a laboratory setting - this establishes the Sound Transmission Class (STC) and Impact Insulation Class (IIC) of the flooring, substrate and ceiling assembly.

However, site conditions don't always mirror the conditions in the laboratory - for this reason, IIC and STC requirements are typically reduced from 50 to 45 for site tests (AIIC, ASTC). With that said, errors and alterations in the field could have a dramatic impact on actual sound ratings, resulting in site tests that fall far short of laboratory results. Below are some of the most avoidable.

Altering Floor/Ceiling Assemblies

Laboratory sound testing is performed on very specific floor/ceiling assemblies. These assemblies are usually uniquely identified with a UL number and fire rating, which dictates the exact dimensions and type of wood joists, concrete, plywood, underlayments, insulation, resilient channels and ceilings. Everything from the spacing of joists to the thickness of plywood is detailed in these assemblies.

Changing something as simple as the thickness of the underlayment or the type of insulation can have a 3-5 point impact on IIC and STC. If laboratory sound testing is performed on a particular assembly in order to confirm performance, it is critical that aspects of the assembly are not value engineered or altered, as this could have an effect on the performance of floor/ceiling assemblies in the field.

Using Generic Resilient Channels

One commonly altered aspect of a floor/ceiling assembly is the metal resilient channels that hold the gypsum ceiling up. Laboratory and field case studies have shown that replacing acoustical resilient channel with generic alternatives could result in a 3 point decrease in both IIC and STC ratings. If these adjustments are made during construction without consultation, it's likely that the owner and/or design teams may not know. However, were site sound testing performed to confirm performance, this would result in lower actual sound ratings.

Leaving Voids At Floor & Wall Joints

It's a common practice of wall contractors to raise gypsum wall boards to ensure a tight, flush wall / ceiling joint. The unfortunate side effect is this creates a gap between the wall and the subfloor. Most times, this void is covered by wall base or base board, but the void between the wall and the subfloor remains.

Voids between the wall and floor act as sound leaks that can allow sound to transmit through the floor and walls. Wall and ceiling assemblies that are exceptional at blocking sound will be more greatly impacted by sound leaks, resulting in reduced STC and IIC ratings. Laboratory tests have shown that a gap as thin as 1/16" can result in a 17 point reduction in STC ratings alone.

These voids and gaps may not be easily identifiable, especially once wall base, base board and/or quarter round has been installed. Visible or not, these voids can have a dramatic effect on actual sound reduction. It's critical that wall contractors and flooring contractors understand that this void must be filled prior to completing the installation if the building is designed to achieve specific IIC and STC ratings.

Summary

Building assemblies, materials and practices that reduce sound transmission are increasing in demand and prevalence in the modern construction market. However, it's important to note that not all assemblies and materials are created equal, and neither are practices in the field. It is critical that all members of the construction team, including purchasers, general contractors, ceiling contractors, wall contractors, concrete finishers and flooring contractors, be made aware of how critical building elements and sound control product selection are to reaching designated sound ratings. Even minor alterations can have dramatic effects on sound control and the long term performance of the flooring installation.

For additional information, please consult the associated product technical information or contact AVA technical services: 1.800.861.5292 - support@avaflor.com