
FUNDAMENTALS OF SOUND TRANSMISSION

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Fundamentals of sound transmission

In buildings sound travels in two main ways: through the structure and through the air.

Impact – or structure borne sound is where mechanical or kinetic energy is imparted directly to the structure through vibrations or impacts. These are then transmitted to other rooms in the building causing another element to vibrate and cause a sound. Main causes of structure borne sound are people (footsteps etc.) household appliances, machinery and other services.

Airborne – where the sound is transmitted along a continuous path to the listener, so through small holes, ducts, or forced transmission through partitions or floors. Airborne sound is affected by, gaps in joints, cracks in masonry or plasterwork, insufficient sealant around pipes passing through the structure, the mass of the construction and the effectiveness of the isolation and absorption layers.

Some tips to ensure good sound insulation performance.

- Ensure that “floating” layers are left floating and are not rigidly fixed
- Fill all joints between parts of the floor to avoid poorly insulated air paths
- Control flanking transmission by using the appropriate detailing
- Lay resilient materials in rolls or sheets with tightly butted and taped joints
- Leave a small gap between the floating floor layers and walls edges and skirting and fill with flexible sealant

- Where possible take the resilient layer up the wall to isolate the floating layer from the wall
- Give attention wherever a pipe or duct penetrates the floor, to reduce flanking transmission and to limit potential air paths
- Allow for movement of materials

Common reasons for **failure**.

- Poor workmanship
- Failure to follow all the detailing
- Floating floors fitted tightly to walls and skirtings
- Non resilient floor finishes fitted rigidly to the floor base
- Sound flanking through beams, joists and walls due to poor isolation



INSTALLATION



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STANDARDS



RECYCLING



MATERIALS



PERFORMANCE