



Passing Part E

Paul Bassett, Technical Director of Hepworth Acoustics, offers some straightforward tips on achieving the required sound insulation standards and avoiding some common pitfalls.

Introduction

It's Monday, the properties are done and decorated, then comes the news - your pre-completion sound insulation testing has failed. Completion date: Friday. This is the kind of nightmare scenario that has any architect or developer waking up in a cold sweat and reaching for the paracetamol. There is a way to avoid the nightmare entirely.

Routes to Compliance

For new build residential developments there are 2 routes to meeting Part E requirements. Either registering the development with Robust Details Ltd and using a fully compliant building system or using a different construction and having pre-completion sound insulation tests. Robust details do not apply for conversions and so, whatever the design of party walls and floors, sound insulation testing will be required.

Robust Standard Details Route

Use of robust details is a sensible approach for those developers in the business of producing multiple units of the same house/apartment types. They simply need to register each dwelling unit with Robust Details Ltd at a fee of £30/plot. As long as the exact construction details are implemented fully there will be no requirement for the developer to commission sound insulation testing. However, it is worth bearing in mind that Robust Details Ltd now have approved inspectors who may visit the site at any time, carry out random spot checks and require remedial work if the tests fail.

Pre-Completion Testing Route

This route allows the architect a free hand in the design of residential developments but they still have to follow the general design principles set out in Part E. The document contains a lot of sensible guidance, although, it has to be said, until you become familiar with it, it can be unwieldy to use. This is where the advice of an acoustic consultant can be invaluable, guiding you through the maze of information and dealing with situations not covered in the document.

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There are, of course, building product companies offering 'low cost solutions' to the Part E requirements, but these are not always the gift they appear to be. Beware particularly of product test data - it may relate to 'acoustic laboratory' test conditions which will never be achieved in practice in your development.

The Testing Procedure

All sound testing must be carried out to a rigorous ISO standard. It is a complex procedure, but a basic description is as follows:

For party walls: one test - an 'airborne' test which involves playing a high level of sound via a loudspeaker positioned in a room of a house or apartment and measuring the noise level in that room and the adjoining room next door. Take the next door noise level results from the loudspeaker room results and you have the sound reduction performance of the party wall. For a new build development the wall performance has to achieve a value of 45 or more (for conversions the min value is 43).

For party floors: two tests - an 'airborne' test and an 'impact' test. The airborne test is exactly as described above. The impact test involves setting up a special floor 'tapping machine' on the floor being tested. This has drop hammers which bang on the floor and the resulting noise levels are measured in the room below only. For new build apartments the impact noise in the room below the floor must be 62 or below (for conversions the max value allowed is a little higher at 64).

The Facts about Testing

Most Building Control Officers will only accept test results from companies that are approved under the Association of Noise Consultants Registration Scheme (www.association-of-noise-consultants.co.uk) or UKAS (www.ukas.com). Testing can only be undertaken when the rooms are in a practically complete state - this means doors in, windows in, slot vents in, electrical socket covers on, etc, and floors not used for storage of building materials! Impact testing of floors must be carried out before the final floor finish is applied (carpet & underlay, laminated flooring, vinyl, tiles, etc). Do not ask for an 'initial unofficial' test, all testing undertaken by approved bodies should be reported and certified. If there is a problem a re-test can be carried out later.

How To Avoid Failures

- Engage an acoustic consultant at design stage (don't wait until the party walls are at second floor level to find out that the blocks used are of inadequate density).
 - Cavity block party walls must have cavities! Do not bridge cavities with common floors, timbers, steels or services.
 - For solid masonry party walls - finish with plaster both sides, plasterboard on dot and dabs can actually reduce the wall performance at some frequencies.
 - For plasterboard party walls use a twin independent frame system rather than a single frame system - this will make fixings for kitchen cupboards, electrical sockets, etc much easier without comprising acoustic performance.
 - For masonry party walls (and internal leaf of external walls) the blocks must be of adequate density - blocks must be ordered for the required min. density in kg/m³ and not just compressive strength in N/mm².
 - Floating floors must be able to float! Make sure they are isolated fully from the sub-floor and perimeter walls.
 - Do not ignore potential flanking transmission of sound via external walls, columns, etc.
 - Penetrations for services can downgrade sound insulation - fully isolate and enclose service pipes with 2 layers of plasterboard.
- Following these guidelines will cut down on the nightmares and lead to a much less stressful handover.