Approved document E came into force on the 1st July 2003 and details new acoustic performances for residential dwellings, flats, rooms used for residential purposes and schools. All with the aim of improving modern day living standards in relation to the effects of excessive noise and reducing unwanted noise transmission within buildings and in particular, to noise transmission within residential dwellings.

Also depending on the works being undertaken, Part E has established a need for **Pre-Completion testing to enforce the standards that the document sets out.**

Many of the construction techniques previously adopted for party walls and party floors i.e. floors and walls between dwellings and common areas have been revised, as the performance standards that have to be complied with have been raised.

All new dwellings and 'Changes of Use to residential usage, schools and school alterations fall under the scope of these regulations. Residential 'Changes of Use' can comprise of: dwelling houses, flats, hotel, boarding house, or rooms used for residential purposes e.g. student accommodation, bedsits.

PERFORMANCE STANDARDS TO BE MET:

Regulation E1 - Protection against sound from other parts of the building and adjoining buildings i.e. dwellings, flats and rooms for residential use are to have reasonable resistance to sound from other parts of the same building and adjoining buildings.

Table 1: DWELLING HOUSES AND FLATS – SEPARATING WALLS, FLOORS and STAIRS THAT HAVE A SEPARATING FUNCTION.

NEW BUILD	Airborne sound insulation sound insulation DnT,w + Ctr dB (MINIMUM VALUE)	Impact sound insulation L'nT,w dB (MAXIMUM VALUE)
Walls	45	-
Floors and Stairs	45	62
MATERIAL CHANGE OF USE		
Walls	43	-
Floors and Stairs	43	64

Table 2: ROOMS FOR RESIDENTIAL PURPOSES - SEPARATING WALLS, FLOORS and STAIRS THAT HAVE A SEPARATING FUNCTION.

NEW BUILD	Airborne sound insulation sound insulation DnT,w + Ctr dB (MINIMUM VALUE)	Impact sound insulation L'nT,w dB (MAXIMUM VALUE)
Walls	43	-
Floors and Stairs	45	62
MATERIAL CHANGE OF USE		
Walls	43	-
Floors and Stairs	43	64

KEY -

DnT,w + Ctr - site measurement of airbourne sound with low frequency correction applied (the higher the figure the better the performance.)

L'nT,w - site measurement of impact sound level, (the lower the figure the better the performance).

It is important that you check with the appropriate manufacturer of the products you are intending to use, that these performances can be achieved – bearing in mind the importance of good quality workmanship to ensure at pre-completion test performances also achieves these performance standards.

Guidance on forms of construction and flanking construction is provided in Approved Document E – and reference should be made to this document for further information.

Any failure in achieving these standards will require the works to be corrected to achieve compliance with the Building Regulations.

What is pre- completion testing?

Part E puts the onus on the owner / builder to demonstrate the stated acoustic rating has been achieved. The requirement is that at least 10% of all new dwellings should be Pre-completion tested on-site. Testing applies to separating elements between dwellings only and not required between living spaces within dwellings, nor for corridors, stairwells or hallways. Testing needs to be carried out by a test body with an appropriate third party accreditation

Building Control will specify the dwelling units and different forms of construction to be tested and it is important that you are involved at an early stage in discussions to ensure the test process is properly carried out.

New dwellings have been exempt testing until July 2004, in order to investigate the possible adoption of Robust Standard Details that could be followed instead.

Copy of the results in an approved format should be sent to the Local Authority Building Control for approval before a completion certificate can be issued.

Any failure in achieving these standards will require remedial works to be carried out to achieve compliance with the Building Regulations. It will be necessary to re-test the works to check that the remedial works have been successful.

Regulation E2 - Protection against sound within dwelling house etc.

Dwellings, flats and rooms for residential use are required to be constructed so that internal walls between bedroom or rooms containing wc's, and other rooms and internal floors, provide reasonable sound resistance.

This new requirement aims to cut down on internal generated noise transmission within the dwelling.

PERFORMANCE STANDARDS TO BE MET:

Table 3: LABORATORY VALUES FOR NEW INTERNAL WALLS AND FLOORS WITHIN: DWELLING HOUSES, FLATS AND ROOMS FOR RESIDENTIAL PURPOSES, WHETHER PURPOSE BUILT OR FORMED BY MATERIAL CHANGE OF USE.

	Airborne sound insulation sound insulation Rw dB (MINIMUM VALUE)
Walls	40
Floors	40

KEY - **Rw** = laboratory measurement of airbourne sound**.** **dB** = Decibel (level of sound reduction required)

The above rules do not apply to walls containing doors, ensuite bathroom walls between bathroom and access bedroom and existing floors in building which is subject to a change of use.

SUITABLE WALL / FLOOR CONSTRUCTION FOR INTERNAL SOUND TRANSMISSION

(NOT TO SEPARATING WALLS / FLOORS - REFER TO MANUFACTURERS DETAILS OR APPROVED DOCUMENT E).

WALL TYPE A

- Timber or metal studding.
- 2 or more layers of plasterboard, each sheet of minimum mass per unit area 10kg/m2 each side of wall.
- All joints well sealed.

WALL TYPE B

- Timber or metal studding.
- 1 layer of plasterboard of minimum mass per unit area 10kg/m2.
- Linings fixed to a timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance between linings of 45mm.
- An absorbent layer of unfaced mineral wool batts or quilt (minimum thickness 25mm, minimum density 10kg/m2), which may be wire reinforced, suspended in the cavity.
- All joints well sealed.

WALL TYPE C

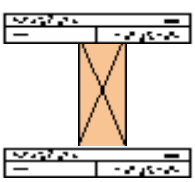
- Concrete block wall, plaster or plasterboard finished on both sides.
- Minimum mass per unit area, excluding finish 120 kg/m2.
- All joints well sealed.
- Plaster or plasterboard finish both sides.

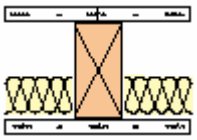
WALL TYPE D

- Aircrete block wall, plaster or plasterboard finished on both sides.
- For plaster finish, minimum mass per unit area, including finish 90 kg/m2.
- For plasterboard finish, minimum mass per unit area, including finish 75 kg/m2.
- All joints well sealed.
- Plaster or plasterboard finish both sides.

Restrictions apply to using wall type D, where abutting separating party walls refer to Approved Document E.

Partitions and internal walls - Approved Document E – Guidance constructions deemed to provide a minimum of Rw dB = 40dB





Timber Stud:
2 x 12.5mm WallBoard either side. 75mm x 38mm studs at 600mm centres max. All joints to be well sealed.

Timber Stud:
12.5mm British Gypsum WallBoard TEN (or 15mm Knauf standard wallboard) either side. 75mm x 38mm studs at 600mm centres max. 25mm Isowool or Crown Acoustic Partition Roll or similar in the cavity, all joints to be well sealed.

MID FLOOR CONSTRUCTION (FLOORS IN SAME DWELLING ONLY).

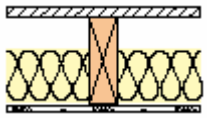
INTERNAL FLOOR TYPE C.
Timber floor joists, with wood based board, plasterboard ceiling and absorbent material in void.

- Floor of timber or wood based board, minimum mass per unit area 15 kg/m2.
- Ceiling treatment of 1 layer of plasterboard of minimum mass per unit area 10kg/m2, fixed using any normal fixing method.
- An absorbent layer of mineral wool (minimum 100mm thick, minimum density10kg/m2) laid in floor void.
- Fill all gaps around internal floors to avoid air paths between rooms.

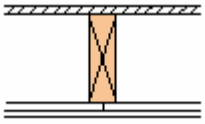
NOTE
- Insulation against impact sound can be improved by adding a soft covering (e.g. carpet).
- Electrical cables may need special precautions where covered by insulation - consult a qualified electrician.

Note: The previous `Standard' mid floor construction comprising basic 38mm wide timber joists at 450 / 600 centres, any structurally suitable wood board flooring and ceiling of a single layer of standard plasterboard does not meet the new Building Regulations for sound insulation.

Approved Document E – Guidance constructions deemed to provide a minimum of Rw dB = 40dB



Timber joists, engineered I beams or steel joists with floor boarding having a mass of at least 15Kg/m2. Ceiling lined with 12.5mm Wallboard TEN. 100mm Isowool General Purpose roll or similar in the cavity, all joints to be well sealed.



Timber joists, engineered I beams or steel joists with floor boarding having a mass of at least 15Kg/m2. Ceiling lined with a double layer of 12.5mm Wallboard, all joints to be well sealed.

IMPORTANT NOTE RE- PLASTERBOARD / CONSTRUCTION.

Please be aware that to obtain plasterboard of minimum mass per unit area 10kg/m2 to comply with the above construction – you need to check with your relevant plasterboard provider.

- Knauf standard wallboard would have to be 15mm thick to achieve 10kg/m2 (10.2kg/m2 actual) - indicated by a Blue E10 on board edges / blue centre line marked with E on board.
- British Gypsum wallboard can be 12.5mm provided you pick their **TEN** board or **FIRELINE** board – again indicated with blue markings on TEN board.
- Ordinary wallboard only gives you 8.5kg/m2 and would require 15mm boards to be used.
- ***Examples of construction details illustrated in this leaflet are heavily dependent on "GOOD WORKMANSHIP" to achieve maximum effectiveness in sound insulation, so they are therefore NOT guaranteed to meet all requirements.***
- ***You can use any other form of construction provided you supply appropriate test data indicating it's compliance with the performance requirements and approval is obtained from your Building Control Surveyor.***

Regulation E3 - Reverberation in common internal parts of buildings containing flats or rooms for residential purposes.

Sound absorptive treatments now need to be applied within corridors, hallways, stairwells and entrance hallways that give access to flats or rooms for residential purposes. This is aimed at reducing the reverberant noise created in these areas, so as to avoid a possible nuisance being created

The easiest way of providing sound absorption is to install an acoustic tile or board ceilings.
Other methods include lining the walls with sound absorbent materials or providing soft floor coverings.

Approved Document E provides 2 methods of calculating the amount of sound absorbing material needed to meet the regulations:

Method A
Cover a specified area with an absorber of an appropriate class that has been rated according to BS EN ISO 11654:1997 - Acoustics – Sound absorbers for use in buildings – Rating of sound absorption.

Method B
Determine the minimum amount of absorptive material using a calculation method – this method is only intended for corridors, hallways and entrance halls as it is not suited for stairs. The calculation method is detailed in the Approved Document.

NEW BUILD AND PRE-COMPLETION TESTING.

From 1st July 2004 – house builders can avoid having to carryout pre-completion testing for new dwellings if they are registered with Robust Details Ltd (www.robustdetails.com).

AND

Before works commencement they notify the Local Authority.

This notification needs to include:

- References of the design details to be followed.
- The parts of the building to which these details are to be utilised.
- The unique reference number issued by Robust Details for the project.

If this is not provided before the works start, pre-completion testing has to be carried out.

Similarly if works on site do not strictly adhere to these details - pre-completion testing has to be carried out.

TESTING BODIES.

Any testing body used for the pre-completion testing must have either:

- UKAS accreditation or an European equivalent (www.ukas.com/) **OR**
- Be a member of the Association of Noise Consultants registration scheme (www.association-of-noise-consultants.co.uk/)

FINALLY:

Remember detailing and workmanship is critical to achieve the above standards – pay great attention to the detail and workmanship to avoid problems.

REMEMBER THE WORKS WILL BE TESTED!! IF YOU FAIL A TEST YOU WILL BE REQUIRED TO CARRYOUT REMEDIAL WORKS AND RE-TEST TO ACHIEVE COMPLIANCE.