

## Air Testing Frequently Asked Questions

### Q: What is air leakage in buildings?

A: Air leakage is the uncontrolled flow of air through gaps and cracks in the building fabric. This is not to be confused with the controlled flow of air into or out of the building through purpose built ventilators.

### Q: Why is it important to build air tight dwellings?

A: The energy that we use to heat our homes is primarily created by burning fossil fuels that produce carbon dioxide. By reducing air leakage of a building we also reduce the amount of energy required to maintain comfort levels and in turn reduce carbon dioxide emissions.

### Q: Why do we have to test for air tightness in domestic properties?

A: Because proving the air tightness of a building is now part of the building regulation process. Domestic energy accounts for more than 25% of the UK's CO2 emissions.

### Q: How many tests are required for a development?

A: On each development, an air pressure test should be carried out on **THREE** units of each dwelling type or **50%** of all the instances of that dwelling type, whichever is less.

A block of flats should be treated as a separate development irrespective of the number of blocks on the site.

### Q: What are the different types of dwellings?

To be classed as the same type **dwellings** have to:

- be of the same generic form (i.e. detached, semi-detached, end terrace, mid terrace, ground floor flat, mid floor flat, top floor flat);
- be of the same number of storeys;
- be of the same design air permeability;
- have similar adjacency to unheated spaces such as stairwells, integral garages, etc.
- have the same principal construction details (as identified by the Accredited Construction Details (ACD) or bespoke detail reference codes);
- have a similar (i.e. + or - 1) number of significant penetrations, i.e. for windows, doors, flues/chimneys, supply/exhaust terminals, waste water pipes;
- have envelope areas that do not differ by more than 10%.

A cold roof will be considered a different dwelling type to a warm roof, similarly with a cold floor (flat above an access road)

### **Q: What are Accredited Construction Details?**

Accredited Construction Details (ACDs) have been developed to assist the construction industry in achieving the energy efficiency requirements of the Building Regulations. The ACDs give various examples and check lists to minimise the effect of cold bridging and achieve a high standard of air tightness. These should be adopted by the designer and check on site by a competent person and the building control body.

Please visit the following planning portal website link to download the "[Accredited Construction Details](#)"

### **Q: Are there any exceptions?**

A: As an alternative approach to specific pressure testing on development sites where no more than two dwellings are to be erected, reasonable provision would be:

- to demonstrate that during the preceding 12 month period, a dwelling of the same dwelling type constructed by the same builder had been pressure tested in accordance with ATTMA TSL1 and had achieved the design air permeability; or
- avoid the need for any pressure testing by using a value of 15m<sup>3</sup>/hr/m<sup>2</sup> at 50 pascals for the air permeability when calculating the DER. (the effect of using this cautious value would then have to be compensated for the improved standards elsewhere in the dwelling design.)

### **Q: Do extensions need to be tested?**

A: Where an extension is proposed to an existing building with a total useful floor area over 1000 sq.m. The building is to be upgraded, as far as it is technically, functionally and economically feasible to meet the requirements of Part L. (This is to meet the requirements of Article 6 of the Energy Performance of Buildings Directive). For average dwellings, therefore, pressure testing of extensions is unlikely to be required. This could change as it could be a key area for the Government to use in reducing CO<sub>2</sub> emissions.

### **Q: When should an air tightness test take place?**

A: The specific dwellings making up the test sample should be selected by the Building Control Body in consultation with the pressure tester. They should be selected so that about half of the scheduled tests for each dwelling type are carried out during construction of the first 25% of each dwelling type. All tests on dwellings in the sample shall be reported to the Building Control Body, including any test failures. The aim is to enable lessons to be learned and adjustments to design and/or site procedures to be made before the majority of the dwellings are built.

The actual dwelling needs to be practically complete. Please view the pre-test check list.

### **Q: How much does an air tightness test cost?**

A: It depends on the location and the number of tests that are required on each site. Please contact us to obtain a no obligation quote. It's useful to consider that several UK studies have shown that improved and demonstrable property air tightness can yield savings of 15% to 30%. This should result in a higher sale price for the property because of on-going reduced energy costs.

**Q: How long does a typical domestic air tightness test take?**

A: It depends on the size of the property, how many apertures need to be taped over and if you are able to provide a full set of plans (preferably in an electronic format). The duration of the actual test should take no longer than two hours. If the property passes the air tightness test a certificate will be issued which should be passed to the building control body within seven days of the test being carried out.

**Q: What happens if the air test fails?**

A: Should a dwelling fail to meet the required standards of air permeability, then the weakness should be identified (there are a number of particularly common areas). Remedial work should be carried out on the dwelling, then a new test conducted on that dwelling until it achieves the limit value in the TER. In addition, a further dwelling of the same type should be tested, thereby increasing the overall sample size.

In addition to the remedial work on a dwelling that failed the initial test, other dwellings of the same type that have not been tested should be examined and, where appropriate, similar remedial measures applied.

**Q: What are the common causes of air leakage?**

A: When there is major air leakage into a floor void, every joint, edge, socket, switch and any other penetration becomes an air path into the heated envelope. Porous block work can allow air to enter a cavity behind plasterboard on dabs - which will communicate to the rest of the dwelling. Even when the cavity is filled with insulation, air will leak through it.

Common air leakage areas are:

- wall mounted heaters
- extractor fans/cooker hood
- eaves, cracks, holes in the inner walls/lining
- dryer vents
- ceiling roses/fused spurs/sockets/switches
- room stats/heating controls
- ends of floor joists/hangers - especially joists that penetrate walls
- chimneys, particularly where flue dampers are not fitted
- recessed ceiling spots
- windows and hollow frames
- beneath inner window sills
- pipes to hot and cold water tanks
- waste pipes from sinks and basins existing through wall
- top of soil stack
- letter boxes, key holes
- under and around door frames - especially double doors
- through sub floor air supplies to solid fuel heaters
- behind coving along wall roof joints
- top and bottom of skirting boards.

**Q: How do you measure air leakage?**

A: The pressure differential is measured across the envelope of the building by means of a large fan installed temporarily and a range of static pressures and environmental readings are taken. The fan is switched on and the air pressure in the property is gradually increased or decreased and the differential pressure is recorded at each step. The total air flow required to achieve a pressure differential of 50 Pa is calculated and divided by the total building envelope area to provide the leakage rate in  $\text{m}^3/\text{h}.\text{m}^2@50\text{Pa}$ .

**Exempted areas**

Note that where a conservatory is not thermally separated from the new dwelling it will be included within the building envelope. Rules for extensions are contained within Part L1B which is for work in existing dwellings for which no air tightness testing is required. Garages are not classed as conditioned spaces and would therefore be sealed off from the dwelling.