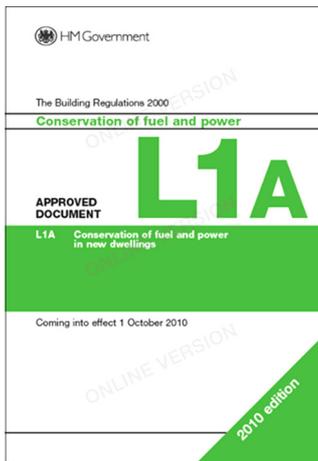




Air Tightness Testing Approved Document L1A & L2A

Approved Document L1A (Dwellings) and L2A (Non-Dwellings) of the Building Regulations was revised in October 2010. This Client Information Bulletin explains these requirements, and flags the implications for residential & commercial developments.

DWELLINGS (L1A)



Why carry out air tightness testing?

It is the only satisfactory way to test whether a building is reasonably airtight.

Unit of air tightness

This is the volume of leakage of air (m^3) per hour in or out of the building per m^2 of building envelope at a reference pressure of 50 Pascals; i.e. $m^3/(h.m^2)$ @ 50Pa

Showing Compliance

Compliance with ADL1A is demonstrated if:

a) The measured air permeability is not worse than the limit value of $10m^3/(h.m^2)$ @ 50Pa; and

b) The Dwelling CO_2 Emission Rate (DER) calculated using the measured air permeability is not worse than the

Target CO_2 emission rate (TER).

However, in a building containing multiple dwellings:

i.e. a row of terraced houses, or a block of flats, in order to achieve the final DER calculation must incorporate the assessed air permeability; this shall be determined as follows:

1) Where the dwelling has been pressure tested, the assessed air permeability is the measured air permeability.

2) where the dwelling has not been tested, the assessed permeability is the average test result obtained from other dwellings of the same dwelling type on the development **plus** a penalty of $2m^3/(h.m^2)$ @ 50Pa.

3) On small developments where the builder has opted to avoid testing, the assessed air permeability is the value of $15m^3/(h.m^2)$ @ 50Pa.

Note: Point 2 above means that in a block of flats, the highest measured air permeability for any dwelling should be a maximum of $8.0m^3/(h.m^2)$ @ 50Pa; it could

be beneficial to test a greater portion of dwellings than the statutory minimum to allow for a higher maximum air permeability.

How many tests?

Testing should be carried out on 3 units of each dwelling type or 50% of all instances of that dwelling type, whichever is the less. Each block of flats should be treated as a separate development, irrespective of the number of blocks on the site. The dwellings to be tested should be taken from the first completed batch of units of each dwelling type.

The specific dwellings that make up the sample to be tested should be selected by Building Control, in consultation with us and site management.

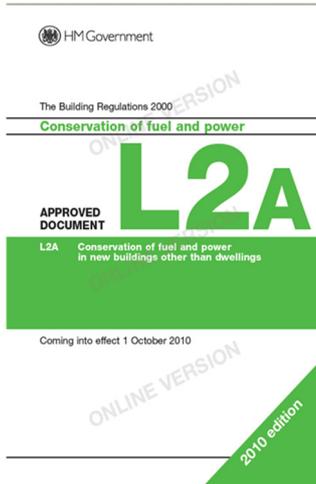
What is a Dwelling?

Self contained unit designed to accommodate a single household. Buildings exclusively containing rooms for residential purposes such as nursing homes, hotels, student accommodation and similar are not dwellings and in such cases, Approved Document L2A applies.



Air leakage should never be considered as acceptable natural ventilation because it cannot be controlled or filtered, and will not provide adequate or evenly-distributed ventilation. It is generally at its most severe during the winter months and has least impact during the summer periods. This is generally the opposite of the requirements for ventilation within buildings. Ventilation of a building should rely on a designed strategy based upon the assumption that the envelope will be relatively airtight.

COMMERCIAL (L2A)



Approved Document L 2A applies to all building types other than dwellings; this includes “rooms for residential purposes” such as a room in a hostel, hotel, boarding house, halls of residence or a residential home.

Do all commercial buildings require testing?

No, buildings less than 500m² total useful floor area may choose to avoid air pressure testing. An air permeability rate of 15m³/(h.m²) @ 50Pa is assumed. This will affect the outcome of the SAP calculations and as such it may well be prudent to complete an air pressure test, this should be less than 10m³/(h.m²) @ 50Pa which will allow greater headroom for the Building CO₂ Emission Rate (BER) to achieve the TER.

It is also possible that the requirements of the carbon emissions target dictate a lower air permeability rate than 10m³/(h.m²) @ 50Pa.



GENERAL

When should a test be carried out?

For residential schemes, about half of the scheduled test sample for each dwelling type should be carried out during construction of the first 25% that will be ready: this is to enable lessons to be learned and adjustments made to design and/or site procedures before the majority of the dwellings are built.

We would recommend air tightness testing is carried out when the external fabric of the building is in its final state and all windows & penetrations etc are completely sealed, i.e. end of 2nd fix (this is also the ideal time for sound testing to take place – so long as no carpets have been laid).

For commercial schemes, as soon as the external building fabric is sealed, this is a good time to test. This allows for any remedial measures to be implemented prior to installing false ceilings/ floating floors etc.

What happens if compliance cannot be demonstrated?

For Residential schemes, Approved Document L1A states the following:

1) Remedial measures should be carried out on that plot and a new test carried out until it achieves the criteria.

2) In addition to this, a further dwelling of the same type should be tested, thereby increasing the sample size.

3) The remedial measures carried out in the failed dwelling should be applied to plots that will not be tested.

For commercial schemes, Approved Document L2A states the following: Remedial measure should be carried out until the building achieves the criteria.

If the measured air permeability on retest is greater than the design air permeability but less than the limiting value of 10m³/(h.m²) then other improvements may be required to achieve the TER. This means builders

would be unwise to claim a design air permeability better than 10 unless they are confident of achieving the improved value.

Can Hann Tucker Associates test any building?

We are able to test any residential dwelling and small commercial buildings. Our equipment has the capacity to test buildings with an envelope area of up to 750m².

Hann Tucker Associates, the leading independent UK acoustic consultancy, is now able to offer Air Tightness Testing for residential and commercial developments.

We are one of the few companies that are a UKAS Accredited Testing Laboratory (No. 4083) for undertaking air tightness testing and sound insulation testing. Air tightness testing is undertaken by staff trained under UKAS approved procedures, testing in accordance with ATTMA Technical Standards L1 and L2.

As a cost effective solution, air tightness and sound insulation testing can be undertaken during a single visit in order to reduce costs.

Reports detailing the methodology and the results of the air tightness and/or sound insulation testing will be formally issued shortly after the final test, along with the relevant certificates for submission to Building Control.

The Building Regulations 2010 ADL1A has significant implications for developers and energy assessors alike, compared to ADL1A 2006.

It is important to understand the implication of these changes at the design stage so as to avoid any complications or ‘penalties’ that may tip the balance of the DER vs. TER calculation at the end of the project.



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