



APT



PLEASE CONTACT AIR PRESSURE TESTING NOW FOR A RAPID PROACTIVE RESPONSE FOR ALL YOUR AIR & SOUND TESTING



# Air & Sound Testing for Timber Frame Companies

**Air Pressure Testing Ltd**



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Air Pressure Testing are a members of the British Institute of Non destructive testing for Air Leakage Testing, as well as being UKAS accredited for Sound Insulation Testing in compliance with Part E of the building regulations

We offer a rapid proactive approach for all of your Part L & E testing requirements

Currently we are offering extra savings on all environmental testing, especially if you have Air & Sound Testing at the same project

If you have any questions or queries please don't hesitate to call contact us at:

[info@airpressuretesting.net](mailto:info@airpressuretesting.net)

or phone: **07967 233836** or **07775 623464**

**Please read our handy checklists for**

- **Air Leakage Testing on Timber Frame Dwellings & Commercial Units**
- **Sound Testing to comply with Part E**
- **Thermographic Surveys**

## **Air & Sound Testing In One Easy Package**

APT can offer substantial cost savings if a joint package is placed to encompass both testing elements; this is due to our multi skilled engineers, being able to undertake both Air & Sound testing during a single visit. On site co-ordination is also improved, with both tests being undertaken on the same day in a planned methodical manner. We can also provide out of hours testing (if required) to help reduce the impact of testing during working hours. Some of the benefits our one stop package provides are:

- Easier on site co-ordination resulting in Minimal site impact
- Out of hours working for both Air & Sound Testing
- Substantial cost saving

Other companies offer Air & Sound Testing in one package but they don't undertake both disciplines in house, they usually out source the Sound Testing, this means they charge more with their on costs, plus they cannot ensure the same on site coordination.

APT have an extensive knowledge regarding the way different materials and construction methods can influence the results of Air & Sound Testing. Ultimately we understand the importance of constructing an air tight building envelope to comply with part L, as well as optimising sound insulation to comply with Acoustic Regulations (part E)

### **AIR TESTING**

We provide a personal, helpful, efficient and cost effective service to our clients. Using the latest high power, portable door fans systems, we are able to offer air leakage testing to all building types, ranging from small rooms, residential flats & houses to commercial office blocks & large distribution warehouses in accordance with the ATTMA Technical Standard 1. Our fan systems are compact, discreet and fit simply into personnel doors. The system can easily be transported through areas of limited access or up to high level areas. It is for this reason that many companies working in busy city centres or in general tight access areas utilise our expertise and equipment. We are able to eliminate the site disruption caused by the larger trailer type testing equipment. Construction works can also continue inside the building whilst the air leakage test is being carried out.

### **SOUND TESTING**

Recent changes to the Building Regulations in 2000 mean that many new dwellings and conversions require sound insulation tests to demonstrate compliance with the airborne and impact sound insulation criteria given in Approved Document E (ADE). APT can perform these at relatively short notice for any sized development, from two-flat conversions up to hundreds of flats. Utilising the latest sound testing equipment this shortens the duration of the sound test to ensure site disruption is kept to an absolute minimum.

### **THERMOGRAPIC SURVEYS**

A thermal image makes it simpler to see where insulation is missing or air is leaking in or out of a building. Any object that is not transmitting, generating or absorbing heat will take on the surrounding air temperature, so cold air leaking into a building (or missing insulation on a heated building) will cause cold patches on the wall, floor or ceiling. Conversely, warm air leaking from a building will cause warm patches on the outside of a wall or roof.

In short, the benefits of infrared thermography are:

- Quick inspections
- Results are easily shown visually
- Identifies the areas of air leakage
- Shows thermal insulation defects

## Handy Design Info for Timber Frame Construction

### Wall Tie Fixings to Timber Frame

The breather membrane is not the main air barrier, but it is nonetheless a useful ally in reducing air leakage through the construction generally. Ensure that wall tie fixings do not lead to damage to the membrane, ideally, by taping over the area of membrane at which the tie is fixed.

### Use of Corrosion Resistant Staples or Fixings

Non-corrosion resistant fixings to external breather membrane can corrode to a point where they fail, allowing the membrane to come loose, often creating a small hole in the membrane and reducing the effectiveness of the membrane as an airtight layer. Copper is non-corrosive but can affect polyethyl-ene, whereas stainless steel has no effect on polyethylene and so should be preferred.

### Membranes to be Lapped and Sealed

Typically both internal and external membranes are lapped and stapled or tacked, but in order to create airtight layers, it is important that these laps are rigorously sealed. Best practice in this regard - beyond the correct use of Manufacturers' overlap dimensions, proprietary tapes and other accessories - is to run a layer of double sided tape between the membranes at the overlap and run a tape over the leading edge of the outer sheet. In addition, since many tapes tend not to last too well, it is advisable to ensure that laps are made directly over supported areas (i.e. with studs or dwangs directly behind) and are held down positively with battens fixed through forming a mechanically tight, as well as an adhesive seal. This requires consideration of lap positions early on if extra framing or subsequent battening is needed.

### Ensure Continuity of Membrane / Co-ordination of Trades

Whilst this is easy to achieve across large, flat areas, it is more difficult at the many awkward angles, junctions, corners and so on a typical site. There is no specific guidance except to ensure that those responsible for installation of the membrane are rigorous and conscientious in their attention to all of the inevitable nooks and crannies, and that the person responsible for co-ordination is equally attentive, particularly when the junctions are between separate forms of joint and separate trades.

Ensure Membrane is taken into Opening Reveals, Taped and Sealed and Made Continuous with Opening Seals it is typical at openings in timber frame buildings to allow the membrane to run across the opening initially, then form a star cut into the opening, folding over the sections of membrane and trimming as necessary. In these cases, there are inevitable gaps in the airtight layer at the corners of the opening, and it is important to ensure that these are made good before subsequent installation of joinery etc.

Fix Airtight Membranes to Firm Backing Boards In conventional timber frame construction, vapour barriers are fixed across studwork, usually after the installation of insulation and prior to the fixing of the internal lining. Equally external breather membranes are sometimes installed across gaps between rafters or studs. In both cases membranes are susceptible to pressures from both sides, leading to the membrane breaking free of its fixing and creating holes in the airtight layer. Ideally, membranes should be fixed against a firm backing board by way of protection against damage of this nature.

## **Service Voids**

The principal advantage of a service void is related to functionality and maintenance over time, but a secondary advantage which relates directly to air-tightness is that since all services may be incorporated within, that is, on the inside of the vapour control layer, there is no need to penetrate the layer at each and every service installation, thus significantly cutting down on the myriad potential gaps that are typically formed and either left, or made good which is time consuming and costly.

## **Airtight Service Boxes**

Developed in Canada where airtight construction is more advanced, these service boxes are fitted with gaskets and a flange surround allowing for an airtight seal at all openings in the lining.

## **Mastic Both Edges to Skirting's, Reveal Linings, Cornices etc**

Where the corner junction behind has been carefully sealed then this measure may not be required. In addition to the nail or screw fixing, a mastic seal both edges aids efforts to guard against infiltration, but it makes removal and alterations more difficult.

## **Ensure Continuity of Membrane behind and around Lintels**

It is likely that to achieve this requires two separate measures. First the breather membrane needs to be continuous and extend into the opening, thus a second strip should be affixed to the wall and lapped and sealed to the main membrane which must lap over the lintel or cavity barrier etc. Second, it is likely that gaps could form between the top, outer edge of the joinery and the lower, inner edge of the lintel, leading to a cavity behind the lintel. This cavity should be filled with expanding foam or mineral wool and if possible the gap filled, probably with a mastic sealant.

## **Flexible Foam Sealant around Joinery Insertions**

Gaps around openings are one of the most common of infiltration paths. They range from 0 to 20mm, which is too large to be filled by mastic. Compressible flexible foams are ideal for this application. Ensure that the airtight membrane meets the seal on both sides to maintain the airtight layer overall.

## **Draught-stripping of Openings in Joinery**

Draught-stripping of joinery comes in many forms. It appears that synthetic rubber or elastomeric tubular seals work well, creating good seals with minimal compression, depending on the size of the gap. It is important that seals are unaffected by paintwork and subsequent decoration, or are easily accessible and removable. This is important so that seals can be replaced as they start to fail to maintain the airtight layer.

## **Seal all Penetrations in Plasterboard / Internal Lining**

Even with the use of airtight outlet boxes there will be inevitable penetrations such as ceiling pendants, pull cords, recessed fittings etc. which must be made good manually, typically with mastic.

## **Seal Loft Hatches**

Generally, this involves a continuous bead of mastic to the underside flange, and, depending on the design, the use of compressed and flexible foam, or mineral fibre etc. above.

## **Use of Joist Hangars as Opposed to Built-in Joists**

The original specification here is already good practice, that is, the use of joist hangars which sidestep the problems of joist movement and shrinkage allowing infiltration and airflow within the floor voids.

## **Membrane Strip to Inner Face of Floor perimeter Beams**

100 gauge polythene or similar fixed to the inner face of the perimeter beams early on in the framing process can lapped and sealed to the internal vapour control layer typically installed a good deal later, so that a continuous internal vapour control and airtight layer may be effectively created.

## **Continuity of Membrane to Ceiling over Partition Walls**

Ideally this would comprise a continuous membrane affixed before the partitions are installed. However it is more likely that partitions are installed before, therefore such a layer would require strips to be fixed to the partition top runners to be later lapped and sealed to the ceiling vapour control layer.

## **Flexible, Rather than Rigid Insulation**

Rigid insulation between joists, studs or trusses generally has to be cut to fit and this is never 100% accurate, leading to myriad gaps and routes for airflow. Flexible insulation avoids this problem.

## **Top Runner Strip Seal**

The use of this strip, lapped and sealed with subsequent membranes both sides prevents infiltration into the wall itself from the ventilated eaves area, thus ensuring continuity of the airtight layer.

## **Air Barrier to Ceilings**

In ceilings within dwellings of the same occupancy, this is unlikely to be useful, but in separating floors, it is extremely important that an air barrier is included in the floor and ceiling make-up.

We hope this information has been of help and look forward to working with you in the near future, if you have any questions or queries in regards to Air & Sound Testing please don't hesitate to contact us at: [info@airpressuretesting.net](mailto:info@airpressuretesting.net) or call us on 07967 233836 / 07775 623464.

Kind Regards

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