

On-site Air Tightness Test Check List – *Commercial Buildings*

This on-site checklist supplied courtesy of Ryedale Testing will help you achieve the best possible air tightness results. Checklists are also available for Timber framed & domestic buildings. You will doubtless be aware of most of the likely causes of air leakage but you might be surprised by the amounts of air involved at a wind speed of 20 mph.

General notes

Getting good air tightness is all about boundary sealing. Most building materials (with a few exceptions) will not allow the general passage of air. Where they are jointed to one another or to a different material, however, there is the potential for air leakage.

Using the inner lining of the building as the air tightness barrier, rather than relying on other elements, is to be strongly recommended. Insulation and other components between the internal conditioned space and external weather shield may rely on air movement to prevent condensation, degradation or corrosion. Preventing air (and water vapour) passing outwards from the internal conditioned space will help reduce potential break down of elements outside the inner lining.

The type of lining can have a big impact on the air tightness performance of the building. Panel linings such as plasterboard or pre-finished board are only as good as their perimeter or penetration seals. Wet plaster or render finish on brick or block gives a generally good performance due to its gap filling properties. In some cases where a parge coat of plaster or render is required to improve sound insulation this will also improve the air tightness performance of the wall. Fair-faced brickwork and blockwork will require good workmanship with particular attention to full perpend joints if air tightness performance is not to be compromised. Some types of block may require additional sealing if high levels of air tightness are required. Junctions of masonry linings with other lining components need appropriate detailing and good workmanship. Steel liner sheets are inherently air tight but side and end laps need to be carefully considered as do joints with flashings and at changes of direction.

For a steel framed and clad building, Corus provide some good information on their website and PDF guidance documents may be freely downloaded.-(www.colourcoat-online.com). They recommend the principle of using the inner lining of the building fabric as the air tightness barrier and ensuring importance is attached to achieving the best results during the assembly of the building envelope. They also identify that built up systems will require a different methodology than composite panels.

Ensuring cladding sub-contractors carefully follow this guidance will go a long way to obtaining an air tight building and reducing remedial sealing.

Compartment walls in large span buildings may have a deflection head detail at the junction of these walls with the roof or intermediate floor. Where air tightness is required at this intersection the building designer's details need to be carefully considered.

Some commercial buildings can be considered as "big houses" from an air tightness sealing point of view and our domestic checklist will provide useful guidance.



	Upper level	Check
1	Sealing of roof liner sheets to one another at ridge - profiled fillers in place, sealant beads at stitched joints.	
2	Sealing of roof liner sheets to vertical sheets at eaves and gables - profiled fillers in place, sealant beads at stitched joints.	
3	Sealing of roof liner sheets to masonry walls at eaves and gables - profiled fillers in place, sealant beads at stitched joints, liner trays in place and sealed	
4	Sealing at head of compartment wall – deflection head detail? Ensure all designed seals in place. Use fire rated sealants where remedial sealing is required	
5	Ceiling access hatches-check draught seal and hatch for distortion	
6	Recessed ceiling spotlights- use either sealed fittings or proprietary covers, e.g. Loftcap	
7	Pipes and cables passing through ceilings or roof lining – mastic or foam seal around	
8	Gaps around wall mounted heaters	
9	Perimeter of window openings	
10	Soil and vent pipe boxing taken into ceiling void – ensure seal where boxing communicates with conditioned spaces	
11	Gaps around sockets, light switches, room stats etc., particularly where external walls are dry lined	
12	Ensure dry lining is carried out in accordance with manufacturer's recommendations, i.e. perimeter bead of adhesive + continuous bead around services.	
13	Waste and service pipe penetrations	
14	Service pipe penetrations – hot/cold water storage vessels	
15	Cloakroom/Bathroom and shower room extract fans – ensure seal where duct penetrates external wall or ceiling lining	
16	Skirting/floor/plaster junction to walls – decorators caulk or mastic to prevent air movement from floor void	
17	Cable entry points	

Areas that should be temporarily sealed for the duration of the test:

Mechanical Ventilation	Open boiler/fire flues and air supply grilles
Passive stack ventilation systems with automatic/no dampers	Actual extractor fans/cooker hoods
Airbricks sealed	



	Lower levels	Check
1	Junctions of masonry with steel frame- vertical-ensure compressible or rigid seals are in place at interface, stanchions, windposts etc.	
2	Junctions of masonry with steel frame- horizontal-ensure compressible or rigid seals are in place at interface, sheeting rails, restraint rails etc.	
3	Soil & vent pipe boxing - ensure seal where boxing communicates with conditioned spaces	
4	Perimeter of external door frames	
5	Perimeter of window openings	
6	Gaps around sockets, light switches, room stats etc, particularly where external walls are dry lined	
7	Ensure dry lining is carried out in accordance with manufacturer's recommendations, i.e. perimeter bead of adhesive + continuous bead around services.	
8	Skirting/floor/plaster junction to walls – decorators caulk or mastic to prevent air movement from floor void (suspended floor) or via gaps behind dry lining.	
9	Waste and service pipe penetrations – W.C.'s	
10	Access floor – perimeter sealing to void	
11	Suspended ceiling voids – perimeter sealing to void	
12	Waste and service pipe penetrations - showers	
13	Waste and service pipe penetrations – basins, sinks, wastes	
14	Tumble drier vents	
15	Service entries. Oil, Gas, Water & Electric. Check sealing at entry points particularly where leakage could occur from external meter cabinets or in internal service risers.	
16	Sealing to water service pipe entry	
17	Cloakroom, shower room and kitchen extract fans – ensure seal where duct penetrates external wall or ceiling lining	
18	Recessed ceiling spotlights – fire & acoustic rated lights should provide a seal between conditioned space and ceiling void but check perimeter seal.	
19	Boiler flue – (balanced) check sealing around wall penetration	
20	Boiler – condensate drain	
21	General – security and fire alarm installation penetrations	

Areas that should NOT be temporarily sealed for the duration of the test:

External skin cavity ventilators	Letterboxes, Keyholes
Seals to drains and overflows	Penetrations through walls e.g outside taps
Balanced flues	Seals to access hatches

