

## How to prepare traditional solid walls for IWI Installation

### Best Practices

For optimal performance and longevity of any internal wall insulation system, it is crucial to eliminate or decrease all sources of moisture in the wall before installation begins. Persistent damp penetration issues in the wall construction could potentially cause harm to the insulation system or the structure of the building and must all be thoroughly investigated.

Effective ventilation of the living space is also essential both during the refurbishment period when wet trades may be employed and over the lifetime of the building to maintain a healthy, comfortable, and durable living space.

Once an insulation system is installed, it is important to undertake regular maintenance of the building to ensure moisture related issues do not reoccur.

**Please note:** Buildings which are prone to flooding are outside the scope of this guidance document. Additional guidance can be found here: [Historic England – Flooding and Historic Buildings](#).

### What to investigate:

- Suitability of the building
- Existing finishes on the wall
- Condition of the wall
- Weatherproofing
- Drainage & Ground source damp
- Pipes (internal plumbing & external water goods)

### Suitability of the building

The building should be assessed to ensure that it is suitable for insulation. This should consider external ground levels, runoff patterns, the water table, the existence of a functioning damp-proof course and if external drainage such as a French drain are present. If the walls being insulated are below ground level and penetrating damp cannot be addressed from the outside, a waterproofing system such as [Diasen Watstop](#) should be installed prior to the internal wall insulation.

### Existing finishes on the wall

The following coverings must be removed from the wall:

- Plastic based paints
- Wallpaper

Impervious coverings like these impede the overall breathability of the wall and can trap moisture inside the wall preventing evaporation. This can lead to moisture accumulation, mould growth, structural damage and poor indoor air quality. They can be removed with scrapers, sandblasters, vapour blasters or a wallpaper stripper.

Once coverings are removed, investigate what type of plaster is present on the walls (if any) to ensure it is compatible with the proposed insulation system.

- **Lime-based plaster**  
These are the most compatible with moisture/vapour open insulation systems because they allow for moisture to evaporate from the walls more rapidly.
- **Cement based plaster**  
Ideally these should be removed to optimise breathability of the wall. Where the wall is dry and the cement is not contributing to a damp issue and removing the solid well bonded cement from it may lead to structural issues or damage to the background, it is possible to install capillary active mineral systems such as Calsitherm or Diasen Diathonite to this substrate. If wood fibre insulation such as Gutex Thermoroom is being installed, cement based plaster should always be removed from the wall first.
- **Gypsum plaster**  
Gypsum is more prone to degradation and mould growth, and it is generally incompatible with vapour open insulation systems. It should be removed before installing insulation.

Incompatible plasters must be stripped back to ensure proper adhesion of the insulation system to the wall and prevent potential moisture and mould issues in the future.

### How to identify lime-based plaster from gypsum plaster

- **Visually:**  
Lime-based plasters are usually more porous and have a less smooth finish than gypsum-based plasters. Lime plasters may also contain horse or goat hair as an additional reinforcement.
- **Acid Test:**  
Lime-based plasters will fizz when a drop of vinegar is applied to them. Gypsum-based plasters will generally not react.
- **Laboratory Analysis:**  
In some cases, it may be necessary to send a sample of the plaster to a laboratory for analysis to determine its exact composition. Contact our technical team for advice.

### Condition of the wall

The surface of the wall must be well bonded, dry, clean, and free of debris before proceeding with insulation. Cracks or defects in the masonry should be stabilised with suitable lime-based mortar or plaster (e.g. [Diathonite Regularisation](#)) to ensure proper adhesion and prevent potential cracks in the future.

### Salt Penetration

Salt deposits on the wall can cause damage to the insulation system and the overall structure. Any evidence of salts should be noted at an early stage of the inspection process before any works commence.

Salt can be due to water infiltration, particularly in older buildings or in areas with high levels of salt in the surrounding environment. If present, it is important to remove the affected plaster and replaster the affected areas with a suitable breathable salt inhibiting plaster like [Diathonite Deumix+](#) or [Diathonite Regularisation](#) prior to installing the insulation system. This ensures a suitable base is achieved and the risk of salt penetration issues in the future is reduced.

## **Mould**

Mould on the surface of plasters or the underlying masonry (once plaster is removed) must be treated and cleaned off with a suitable mould cleaner.

## **Gaps or holes in masonry**

Any gaps, open mortar joints or holes in the wall must be filled with lime-based mortar or Diathonite insulating plaster. Bricks and stones can be used in addition to fill larger gaps or holes.

## **Weatherproofing**

The building should be weatherproofed prior to any internal insulation application. This should include checking and making good the following:

- Roof leaks especially at chimneys and flashings
- Damaged, missing, or ineffective roof coverings such as damaged/missing slates
- Damaged, missing, or ineffective pointing
- Damaged, cracked, or missing bricks
- Leaking window junctions
- Leaking, missing or insufficient guttering
- Blocked, damaged or ineffective downpipes
- Vegetation against the walls or abutting walls
  - Leaks where roots have or could damage the walls or structure of the building
  - Where water run-off from branches/leaves persistently wet the wall

Also consider the provision of adequate overhangs at windowsills, roof eaves and gables. This is important especially in exposed areas.

Repointing and brick repairs should be done with a breathable lime-based mortar.

## **External surface finishes**

Impervious coatings such as cement renders or paints should be removed if they are cracked (boast), bulging or have bits missing and are contributing to a dampness issue.

## **Protect against wind driven rain**

On walls that are unrendered externally, it is highly recommended to apply a suitable breathable paint or lime wash to provide additional weather protection. To retain the natural beauty of stone or brick, and protect against wind-driven rain, a vapour open (fully transparent) rain repellent like [Diasen BKK ECO](#) can be applied on the external surface instead.

Do not use an impervious watertight sealer, plastic based paint or tanking treatment over large areas of the exterior of the wall.

## **Drainage & Ground Source Damp**

A French drain system along the base of external walls outside is highly recommended. This involves digging a trench around the perimeter of the building adding drainage pipes and then filling it with

gravel or foam glass aggregates. This creates a pathway for excess water to flow away from the building.

A French drain can effectively address issues such as ground source damp, groundwater, or rainwater that is seeping into the foundation of the building.

## **Pipes**

Leaking internal or external pipework causing escape of liquid water from water supplies or wastewater systems will cause dampness or localised flooding. This can arise where tanks, supply/waste pipes, radiators, sanitary fittings, and appliances (e.g. washing machines) develop leaks. All leaks must be repaired before an insulation system is installed.

## **Drying after remedial works**

After any remedial work is completed, any sections of the existing construction that are damp must be allowed to dry completely before proceeding with internal wall insulation.

Above ground-level where damaged or unsuitable plasters have been removed and all sources of moisture have been reduced or eliminated, a vapour open restoration plaster like Diathonite Deumix+ can be used to replaster the area. This protects against the residual dampness in the wall and will accelerate the drying process thanks to its exceptionally high capillarity. This is recommended rather than using a tanking plaster prior to installing internal wall insulation.

Once the drying process is complete, the building must be re-evaluated (based on this guidance) to ensure that the wall is now in a suitable condition for insulation.

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**Call us**

**Great Britain** +44 (0)1228 711511

**Ireland** +353 46 9432104



**Email us**

[info@ecologicalbuildingsystems.com](mailto:info@ecologicalbuildingsystems.com)



**Find us**

**Great Britain** Ecological Building Systems UK Ltd.,  
Cardewlees, Carlisle, Cumbria, CA5 6LF,  
United Kingdom

**Ireland** Ecological Building Systems Ltd.,  
Main Street, Athboy. Co. Meath, C15 Y678,  
Republic of Ireland