

# Internal solid wall insulation

## Adding a thermal layer to the inside walls



Nearly half of all the heat lost from some solid-walled houses escapes through the walls. Insulating these walls will slow down the rate at which heat is lost and keep the warmth inside the home for longer.

Solid wall insulation may be suitable for a variety of property types such as brick, stone, steel-framed and concrete construction.

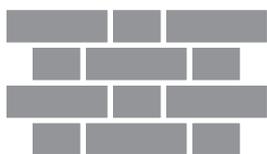
Internal solid wall insulation works by adding a thermal layer of material to the existing wall. Solid walls can be insulated internally (from the inside) and externally (from the outside). Both are significant undertakings in terms of cost and disruption but both options can make your home warmer and greatly reduce your heating bills at the same time.

Internal solid wall insulation is particularly appropriate where you need to maintain the external appearance of the building (e.g. in a heritage context).

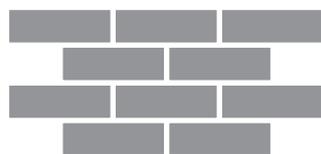
### How do I know if my home has solid walls?

If your home is made of brick, and the bricks have an alternating long-short-long pattern, then the walls are likely to be solid. If you can see only the long edge of the bricks, then the wall is almost certainly a cavity construction.

Solid wall



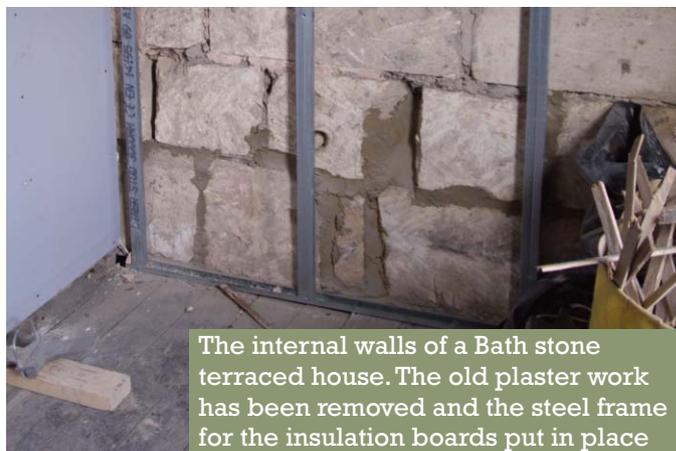
Cavity wall



If the brick work is not visible then measuring the thickness of the wall at any entrance or window will help to determine the construction type. A solid brick wall is usually about 22cm thick, a cavity wall between 27cm and



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The internal walls of a Bath stone terraced house. The old plaster work has been removed and the steel frame for the insulation boards put in place

Photos: Will Anderson

30cm and a solid stone wall as much as 50cm thick. The age of your home can also be a good indicator; if it was built before the late 1920s it is likely to have solid walls.

### Types of internal solid wall insulation

There are various ways to insulate a solid walled building from within, but they broadly fall into three categories:

#### 1) Rigid insulation boards

These come in a variety of materials and thicknesses and deliver the highest energy saving. Some have pre-attached plasterboard which makes the installation easier.

#### 2) Dry lining

Battens are fixed to the walls, insulation is fitted between them and then covered with plasterboard. This is a good option if the wall has a lot of heavy fittings such as book cases or kitchen cupboards, or if the original wall is rough and uneven, as in some stone properties.

#### 3) Flexible thermal lining

This comes in rolls like thick wallpaper and is glued to the wall using a special adhesive. It may not provide the same level of insulation but you could install the material yourself if you are a competent DIY-er. Moreover, as flexible linings tend to be no more than 10mm thick they can be a good option for rooms that have limited space.

### Average cost and savings

Internally insulating your home will probably cost between £5,500 and £8,500, depending on how many rooms are being renovated and the type of material being used. Generally this is less expensive than external solid wall

insulation because of the lower cost of materials and labour. A typical 3-bedroom semi-detached house using gas heating could save around £260 per year on heating bills by installing internal wall insulation whereas a detached house heating with oil could save around £450 per year.

### Disruption

Internal solid wall insulation is a significant undertaking that inevitably involves a degree of disruption. Your installer should make you aware of any particular issues but things to consider include:

- A skip may be required;
- Rooms where the work is being done may not be usable and furniture, kitchen units etc may need to be temporarily removed;
- Fittings such as radiators, skirting boards, window sills and plug sockets on the wall that is being insulated will need to be removed and reattached afterwards;
- Pipe work and wiring may need to be re-laid;
- The works will produce dust and could well be noisy;
- Contractors will require water and power and the use of a toilet;
- The newly insulated walls and adjacent surfaces will need to be re-decorated when the work has finished.

Internally insulating your walls will reduce the size of your rooms. However you may find that by making a cold wall warmer they actually increase the amount of usable space.



Repair of the ceiling cornice after internally insulating this solid walled terraced house

A cut-away model of internal solid wall insulation.

#### 1 | Surface coating

This is the new plasterwork that covers the insulation layer. Just like a normal internal wall, it can be painted (green in this case) or papered

#### 2 | Insulation

This is the layer that prevents warmth escaping through the outside walls of the house. In this case, rigid insulation boards have been used.

#### 3 | Internal wall

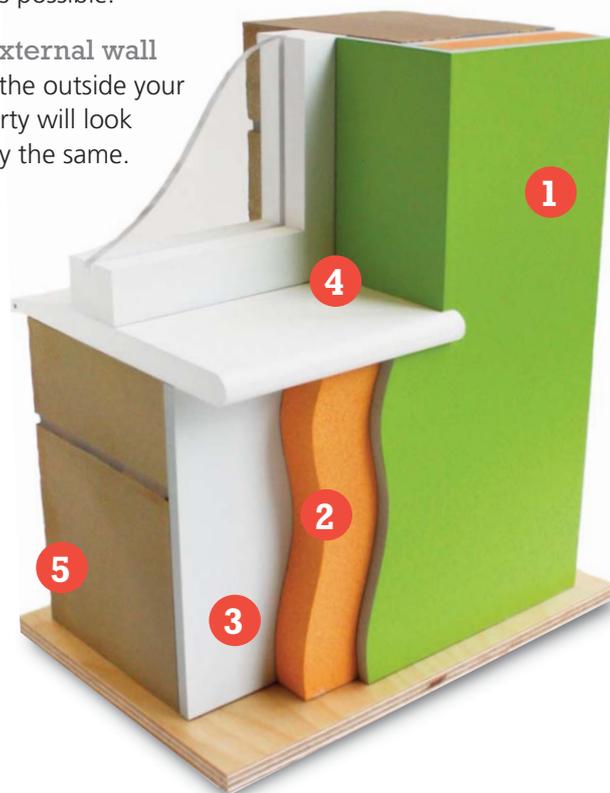
This is the old internal plaster which is now covered by the new insulation board and plasterwork.

#### 4 | Windows

Ideally, the insulation board is fitted to the inside of the window recess to prevent cold patches developing where condensation forms. But, as is the case here, this is not always possible.

#### 5 | External wall

From the outside your property will look exactly the same.



This leaflet was originally produced by the **Centre for Sustainable Energy** (CSE) and reprinted in this version on behalf of SEACS.

CSE's **Home Energy Team** offers free advice on domestic energy use to householders in Bristol and Somerset (including the unitary authorities of North Somerset and Bath & North East Somerset).

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