Insulating Your Home

Cavity wall insulation and solid wall insulation

By insulating your home you reduce heat loss and hence reduce your bills, your energy use and carbon emissions which contribute to climate change. You also improve the comfort of your home.

Do I have cavity walls?

If your house was built before 1920 then probably not. If it is younger, you can usually tell from the brickwork pattern – solid walls will have half-bricks visible - or from the thickness - cavity walls will be 11” thick or more.

Other sorts of wall can usually be insulated with solid wall insulation

Are my cavity walls already filled?

If your home was built in 2000 or later you should have had cavity wall insulation installed from the start, as required by building regulations, otherwise it may. If it was filled later you should be able to see the holes drilled (and now filled in) to allow this – about 1m apart.

You can ask a registered installer to survey your home. They will drill a small hole in your external wall to see if your walls are hollow or filled.

Can my cavity walls be filled?

You cavity must be at least 50mm wide and clear of rubble.

The masonry or brickwork must be in good condition (and definitely no signs of damp).

Cavity wall insulation can help to prevent condensation but all other damp problems must be cured before it can be installed.

How is cavity wall insulation installed?

Cavity wall insulation is blown into the cavity from the outside of a house. The installer drills small holes around 22mm in size at intervals of around 1m in the outside wall of your home. With specially designed equipment, they then blow insulation into the cavity. Once all the insulation is in, the installer fills the holes in the brickwork so you'll barely notice them.

What type of filling should I use?

There are three main systems in common use, and all (except for UF Foam) can be used in all areas of the UK. CIGA has registered installers for all three types:

Mineral Wool insulation is used in the majority of installations. It looks like cotton wool and is produced from either rock wool or glass wool.

Polystyrene Bead is made up of small expanded polystyrene beads normally injected with a binder.

UF Foam cavity wall insulation was introduced into the UK in the late 1960's and involves the injection of a water based chemicals system that produces an insulating foam in the cavity.

All three of these materials offer similar savings but each has different qualities - a registered installer can advise on the most appropriate material for your home.

My cavity wall filling has sunk – can I top it up?

If you have a newer house it is likely to have been installed into the cavity as blocks of insulation. This cannot sink, though it may not be as thick as you would like

If the house is older and cavity wall insulation has settled it may be possible to top up. The key thing is to top up with the same material. By mixing insulation materials you run the risk of causing damp. It is also very important to ensure that the cavity is in good condition. There are cases in older houses, built when building standards were not as high as they are now, where the cavity has been bridged, for example from building debris thrown down the cavity at the time of construction; or cavity ties may have rusted. By topping up insulation in these cases you may create damp.

If an installer tells you it is not possible to top up it is worth confirming why this is the case. Sometimes another installer may be able to do it.
Can filling cavity walls cause damp?
Cavity wall insulation should never be installed if there is already any damp in your walls. However assuming that your property is in good condition the cavity wall insulation will not cause damp. It contains a water repellent and so will not allow migration of damp across a cavity. All types of cavity wall insulation have been tested, assessed and approved by the British Board of Agrément or the British Standards Institution.

Why should I insulate my solid walls?
Solid walls are much more heat leaky than cavity walls even before they are filled. However, insulation can reduce heat leakage by 90%. You will be more comfortable, have lower fuel bills and you will have reduced your carbon footprint.

Unfortunately, insulating solid walls is expensive and disruptive so you may elect to insulate just a part of the house, at least at first.

Solid walls can be insulated, either on the inside or on the outside. Internal insulation can be done one room at a time but external insulation needs to be done at least one wall at a time.

Should I insulate inside or out?
Internal wall insulation is done by fitting rigid insulation boards to the wall, or by building a stud wall filled in with mineral wool fibre.

External wall insulation involves fixing a layer of insulation material to the wall, then covering it with a special type of render (plasterwork) or cladding. The finish can be smooth, textured, painted, tiled, panelled, pebble-dashed, or finished with brick slips.

External insulation is usually less disruptive and keeps the walls warm and dry so there is less concern about moisture. However you may need to extend your eaves, window sills and reveals and it is disruptive to external plants, as well as pipework. You will change the appearance of your house.

Internal wall insulation is typically cheaper, loses some floor space and is disruptive to internal cabling and pipework, skirting boards and so on but does not change the external appearance of the house. Moisture problems can be more of an issue but are minimised by using an experienced professional.

It is also possible to mix both internal and external, for example using internal insulation at the front but external at the back. This may be a good solution if your home is of a heritage construction and has period features at the front but not at the back.

Do I need planning permission?
In most cases you only need planning permission if you are changing the external appearance. If your property is listed or is in a conservation area you should consult your local planning authority.

However, in all cases you must comply with the current Building Regulations. The main requirement is to reduce the U-value (heat loss) through the wall down to 0.30 W/m2K (for England and Wales). You will need roughly 60mm to 120mm of insulation depending on your choice of material.

Should I worry about moisture?
Moisture is bad for walls and it is bad for insulation too, as wet insulation is not very effective. Wet insulation will grow mould and can even rot.

Walls get wet from rain and damp on the outside and are exposed to moisture on the inside from people breathing as well as cooking, bathing and drying clothes. However uninsulated solid walls normally dry out naturally because the heating in the house warms the walls as well. Water evaporates away on the outside. If you already have a damp problem it is essential that this is fixed before you install insulation – whether internal or external. If it is not then your problem is likely to get worse.

Poor workmanship can lead to moisture problems for both external and internal insulation. A reputable and experienced installer will know how to avoid these problems. 

However, no installation is perfect and in case moisture does get into the walls problems can develop which are hidden and hard to treat. The industry does not have as much experience with solid wall insulation as with cavity wall insulation and it is hard to be sure how rarely these problems will arise. Therefore some experts recommend that we should use breathable insulation and finishes to ensure that the moisture can dry out naturally. High performance polysioceynurate or ‘PIR’ foam insulation such as Kingspan or Celotex is not breathable: rockwool, wool and wood fibre insulations are breathable but you will need a thicker layer to achieve the same U-value. Also, you will need a breathable finish such as lime, hemp or clay plaster on the inside or a breathable render on the outside, and if you use paint it must be breathable too.

For more information go to [http://www.transitioncambridge.org/energy](http://www.transitioncambridge.org/energy) and look for the Insulation FAQ.

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