

CAVITY AND SOLID WALL INSULATION

Properly insulated exterior walls in a house will not only increase comfort but also help its inhabitants reduce heating and cooling costs.

Walls leak¹ around 33% of the heat lost in the average home – so insulating walls is one of the most effective ways to save up to 15% of your energy bill and cut CO₂ emissions at home.

In many houses the external walls are cavity walls. Cavity walls consist of two layers separated by a hollow space (cavity). Whereas exposed brickwork consisting of visually appealing bricks are often used for the outer layer of a cavity wall, the inner layer, which is not visible, is generally constructed of cheaper ‘plaster bricks’ or cement blocks. Masonry is an absorbent material, and therefore will slowly draw rainwater or even humidity into the wall. The cavity serves as a way to drain this water back out through weep holes in the base of the wall system.

Cavity wall insulation is used to reduce heat loss through a cavity wall by filling the air space with a porous material. This immobilizes the air within the cavity (air is still the actual insulator), preventing convection,² and can substantially reduce space heating costs. The cavity itself also helps in insulating the building by acting as a thermal break between the two layers. The cavity may be partially or completely filled with thermal insulation material like moisture-resistant plastic foam³ or mineral wool.

Sizes are increasing rapidly to accommodate super-insulating wall specifications, but the larger the cavity the more interior floor area is sacrificed

Cavity wall insulation is a fantastic way to significantly reduce the amount of energy you need to heat your home. With environmental conditions becoming more of an issue,⁴ people now take much more interest in reducing energy wastage. As well as being more environmentally friendly, wall insulation can reduce heating costs as more of the heat is used effectively. As the demand for energy efficiency in buildings increases the issue of thermal bridging in cavity wall openings is becoming more prominent. A thermal bridge is created when materials that are poor insulators come in contact, allowing heat to flow through the path created. Solutions to thermal bridging include cavity closers, an insulated frame which seals the cavity at apertures for doors and windows.

In some early examples of cavity walls stones were used to tie the two leaves of the cavity wall together. Initially cavity widths were extremely narrow and were primarily implemented to prevent the passage of moisture into the interior of the building. Today cavity wall insulation is quick, clean and relatively inexpensive to install. It is injected into the cavity from the outside taking between two and three hours in a three bedroom semi-detached house.

Solid walls lose even more heat than cavity walls; the only way to reduce this heat loss is to insulate them on the inside or the outside. This will help stop heat being lost from your home and help to prevent condensation on the walls and ceilings.

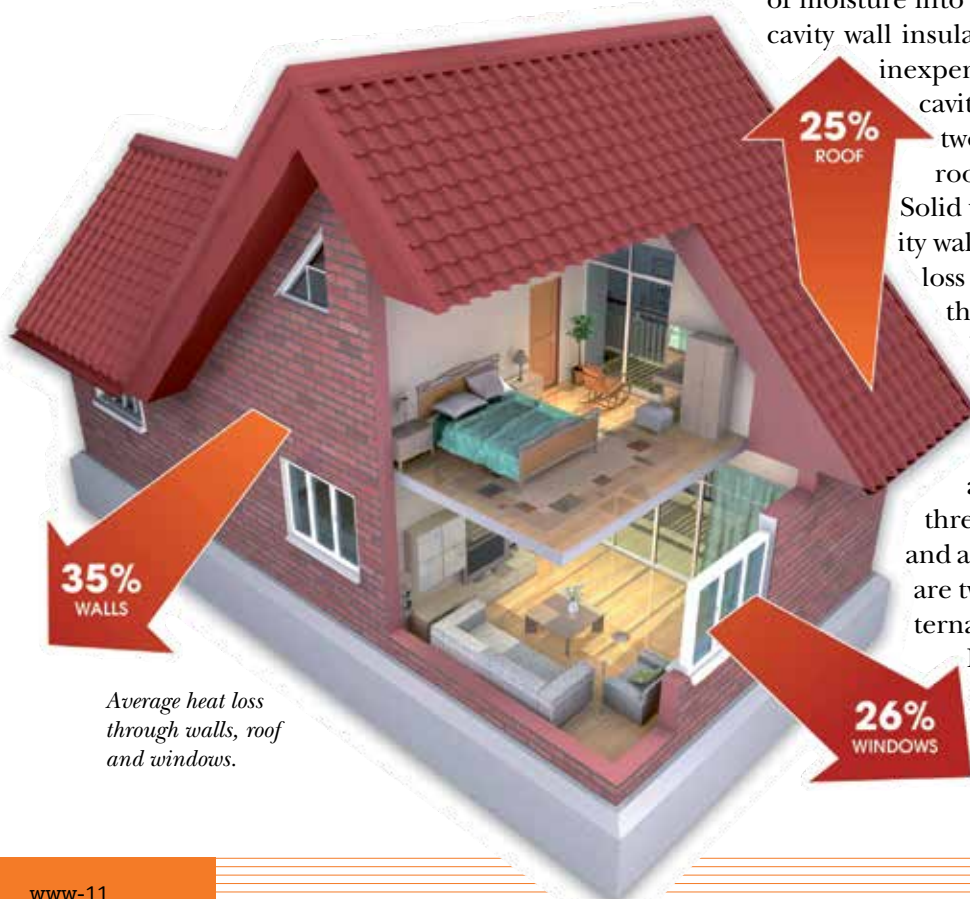
Solid wall insulation is generally a composite system made up of three basic layers – an insulant, a fixing, and a protective, decorative finish. There are two types of solid wall insulation: external and internal.

External wall insulation involves adding a decorative weather-proof insulating treatment to the outside of your wall. The thickness of the



GLOSSARY

- 1 waste
- 2 movement in a gas or liquid
- 3 type of soft rubber with a lot of air in it
- 4 a subject or problem that is often discussed



Average heat loss through walls, roof and windows.



insulation needs to be between 50 and 100 mm and is usually installed where there are severe heating problems or the exterior of the building requires some form of other repair work providing the opportunity of adding insulation. Solid walls can also be insulated by applying internal wall insulation. Types include ready-made insula-

tion/plaster board laminates or wooden battens infilled with insulation. Insulation/plaster board laminates usually consist of plasterboard backed with insulating material typically to a total thickness of up to 90mm. The construction of the laminates reduces the amount of heat which would otherwise pass through into the wall and outside.

READING COMPREHENSION

● Answer the following questions.

- ① What are the main benefits of wall insulation?
- ② What do cavity walls consist of?
- ③ How are cavity walls insulated?
- ④ How can thermal bridging be prevented?
- ⑤ Do solid walls leak heat?
- ⑥ How many types of solid wall insulation are there?
- ⑦ What does external wall insulation involve?
- ⑧ What are the main types of internal wall insulation?

VOCABULARY

● Explain in your own words the meaning of the following words and expressions.

- | | |
|-----------------------------|-------|
| ① Heating and cooling costs | |
| ② Average home | |
| ③ Porous | |
| ④ Moisture-resistant | |
| ⑤ Heat loss | |
| ⑥ Ready-made | |

ACTIVITIES

