Final Diploma

Patent Examination Board

FD4 Infringement and Validity

Tuesday 28 October 2025

10:00 to 15:30 GMT

Examination time: 5 hours 30 minutes plus 10 minutes upload time

The 5 hours 30 minutes is allocated as follows:

10 minutes – Downloading and printing the question paper;
5 hours – Answering the questions;
20 minutes – Four screen breaks of 5 minutes each.

At 15.30 you MUST immediately stop answering the questions. You then have **10 minutes** in which to upload your Answer document to the PEBX system.

You MUST upload your Answer document to the PEBX system by 15.40. After 15.40 you will not be able to upload it and your examination will be void.

INSTRUCTIONS TO CANDIDATES

1. The whole assessment task is to be attempted.
2. The total number of marks available for this paper is 100.
3. You must use the Answer document for your answers.
4. Do not attempt to change the font style, font size, font colour, line spacing or any other pre-set formatting.
5. Start each part of your answer on a new page. Press the control key and the enter key simultaneously to begin a new page.
6. Do not state your name anywhere in the answers.
7. This question paper consists of **16 sheets**, including this sheet, and comprises:
   Assessment task (1 sheet)
   Client letter (2 sheets)
   Document A GB2525252 (8 sheets including three pages of drawings)
   Document B EdgeFlex marketing material (2 sheets)
   Document C DIYhelp forum post (1 sheet)
   A spare set of Claims (Document A) to use in your answer if you wish (1 sheet).

AT THE END OF THE EXAMINATION

8. Save your Answer document to your hard drive and follow the instructions for uploading your document onto the PEBX system.

Assessment task

Your client sends you the letter and documents listed on Instructions to Candidates.

Your task is to prepare notes on which you would base advice to your client on whether the attached granted patent may be enforced and defended in the UK only.

Your notes should:

a) **provide a construction of the claims suitable for use in assessing infringement and validity;**

b) **provide an analysis of infringement of the claims by the described activity;**

c) **provide an analysis of the novelty of the claims in view of the prior art provided;**

d) **provide an analysis of the inventiveness of the claims in view of the prior art provided;**

e) **consider any relevant issues of sufficiency of disclosure of the patent;**

f) **consider any possible amendments to the patent that may impact your client's position;**

g) **provide relevant points of advice to your client pertinent to the facts presented, including possible actions that may be taken by your client to strengthen their legal position.**

Note the following:

a) You should accept the facts given to you and base your answer on those facts.

b) You should not make use of any other special knowledge that you may have of the subject matter concerned.

Allocation of marks

Construction: 23 marks
Infringement: 25 marks
Novelty: 20 marks
Inventive step: 21 marks
Sufficiency: 2 marks
Amendment: 2 marks
Advice: 7 marks
Total: 100 marks

Client letter

Dear Attorney

Thanks for talking to me on the phone just now. I thought it would be useful to give you a written summary of the situation before we meet tomorrow.

I am the head of product development for Build-It UK. We manufacture various building supplies in our factory in West London and supply them to professional tradespeople and independent hardware shops in the UK. We also sell directly to private end users through our online shop.

Last year, I was brought in to set up an in-house product development team. Our main focus at the moment is to develop products to help us increase our sales in the lucrative do-it-yourself (DIY) market. In January 2025, we launched the first of these products on our website: EdgeFlex Insulation. It received some excellent reviews and the sales numbers have been really great.

The new EdgeFlex product is a modified insulation panel for insulating floors, walls or ceilings. The panel has expandable side portions that can make installing the insulation much easier, especially for inexperienced DIY users. I attach some of our marketing material, which explains the product more thoroughly.

Yesterday, I received an email (see following page) from the head of marketing at ScrewStore, one of the big chains of DIY shops, which accuses us of infringing their patent. I've attached a copy of the email and the patent they refer to. I am particularly worried about the suggestion that they are going to sue the hardware shops who buy the EdgeFlex panels from us. It would be disastrous if these shops thought that they were going to be sued, because I expect that they would simply take all of their business elsewhere.

However, I can't see how we are infringing ScrewStore's patent anyway, because their product is really different to ours. Our insulation panels have an expandable bag on each side, into which a user injects expanding foam (currently we recommend using polyurethane foam as it is the cheapest option on the market), whereas ScrewStore's have integral compressible side portions that don't involve a user adding any foam.

Also, I saw the same idea on a DIY forum discussion board several years ago, so I don't see how ScrewStore can have a patent to it. I've attached a screenshot from a reputable Internet archive service. The foil that overlaps onto their side portions is quite a neat feature, but it has been standard practice for many years to add adhesive foil tape over any exposed foam at the sides of polyisocyanurate (PIR) boards, so I don't see how this could be patentable either.

Please take some time to look into all this so that we can decide what to do about ScrewStore's patent tomorrow.

Thanks

Sandy Carpenter

Email sent to me from the head of marketing at ScrewStore

Dear Ms Carpenter

It has come to our attention that your EdgeFlex product infringes our patent GB2525252. We demand that you cease production, distribution and sale of all EdgeFlex products, or we will be obliged to enforce our patent rights through the courts against you and any other seller of the EdgeFlex.

Best regards

Jacques Hammère, Head of Marketing, ScrewStore

Granted Patent GB2525252
(No priority claim, filed 15 July 2022, granted 29 November 2024)
Insulation Panels

Modern buildings are constructed to provide a high level of thermal insulation. Effectively insulating a building's walls, ceilings and/or floors can reduce heat loss during the colder winter months and can also help to keep the insides of buildings cool in the summer.

One material that is very commonly used to insulate buildings is polyisocyanurate (PIR) foam. Relatively thin PIR insulation panels can usefully provide good levels of insulation over large areas without requiring overly thick walls/ceilings. Normally, PIR insulation is provided in large, prefabricated rectangular panels of constant thickness, in which a rigid, insulative PIR core is faced on both sides with a thin metal foil (i.e. the PIR is sandwiched between the foil facings). A range of thicknesses are available for insulating different structures.

PIR insulation can be installed around structural elements of buildings such as timber beams. For instance, Figure 1 shows a conventional insulated wooden stud wall 2 that is formed from a series of vertical wooden posts 4 (studs). The studs 4 are joined together by a wooden base plate 6, a wooden head plate 8 and a series of cross-beams (noggins) 10. Panels of rigid insulation 12 are cut to an appropriate size to fit in the spaces between the wood to insulate the wall. Two of the panels 12 in Figure 1 are shown in cutaway to show that they extend the full depth of the wall 2. When the wall 2 is completed, all of the spaces between the wooden parts 4, 6, 8, 10 are filled with insulation.

It is important to avoid any gaps at the sides of the insulation, which could allow heat to bypass the panel. The panels are made from rigid PIR, which does not flex or conform to obstacles around it, and so they must be cut precisely to fit in the spaces between the studs of the wall. However, because wood is a natural material, the wooden studs are rarely perfectly straight and so the spaces are rarely perfectly rectangular. It can therefore be challenging to cut rigid insulation panels to fit accurately in these spaces without leaving gaps that reduce insulative performance. It can also generally be difficult to cut rigid PIR insulation accurately for inexperienced users or without specialist tools.

The present invention provides an improved insulating panel according to claim 1.

The central portion of the panel is rigid with a fixed size. However, because the side portions are deformable when the panel is being installed, the side portions can adopt a range of sizes to fill in gaps adjacent the central portion. The provision of the deformable side portions can thus aid installation by avoiding the need to cut the insulation precisely to the same width as the space it is being installed into. Instead, a panel of roughly the right width is selected and then the integral side portions are conformed as necessary as the panel is put in place. In other words, the side portions increase the installation tolerance of the insulation panel. However, importantly, the high-performance PIR of the central portion still provides the bulk of the insulative coverage of the panel.

Compressing insulative material would ordinally be expected to reduce its insulative performance, because less air is trapped within the compressed material. However, it has been found that the side portions can provide surprisingly effective insulation at a range of different compressions when it includes 40%–50% polyurethane foam (measured by weight given that the volume of the side portions can change). When less polyurethane foam than this is used, the insulative properties become unacceptably poor, but when more than this is used, the compressibility of the side portions is too low to provide any meaningful improvement in ease of installation. The remainder of the side portion can be a filler such as a mineral wool. It has been found that a blend of 40%–50% polyurethane and, correspondingly, 50%–60% mineral wool can provide over 75% of the insulative performance of PIR, even when compressed to 30% of its original size.

The central portion may be faced on one or both sides by metallic foil (e.g. aluminium foil). The foil reflects radiant heat, improving the insulation performance of the panel. The metal foil can be extended past the edge of the central portion to overlap the side portions. This can extend the reflective effects of the foil to the adjacent space taken up by the side portions, improving overall insulative performance. Preferably the foil is not adhered to the side portions to avoid it distorting when the side portions are compressed.

The panel can be provided in a variety of thicknesses. Preferably the panel is more than 10 cm thick. It has been found that accurate cutting of insulation with standard hand tools becomes markedly more difficult for thicknesses above about 10 cm, because the increased cutting depth makes it hard for a user to keep to an intended cutting path.

The present invention also provides a method of installing an insulation panel according to claim 6. The panel may be installed in walls, ceilings or floors of buildings, or in any other situation where thermal insulation is desired.

The method involves cutting the insulation panel to a desired length. Insulation panels are normally rectangular, and the side portions are provided on the long sides of the panel. It is relatively easy to cut through the entire panel to get it to an accurate desired length, e.g. using a saw. The panel can then be put into place between two surfaces and the deformable side portions conform to fill in any gaps adjacent the PIR.

Drawings

Figure 1 is a schematic diagram of an insulated wooden stud wall;

Figure 2 is a schematic diagram of an insulation panel according to the invention;

Figures 3 and 4 are schematic diagrams illustrating the installation of the insulation panel of Figure 2; and

Figures 5 and 6 show a tool that may be used when installing the insulation panel.

The insulation panel 100 shown in Figure 2 prior to installation comprises a central cuboid portion 102 formed of rigid polyisocyanurate (PIR) and two compressible side portions 104 adhered to opposite sides of the central portion 102. The side portions 104 are made from small beads of polyurethane foam dispersed evenly within mineral wool. In this example, 44% by weight of each side portion 104 is polyurethane foam and the remainder is mineral wool.

The insulation panel 100 is faced with aluminium foil 106. The foil 106 extends over the entire front and rear surfaces of the insulation panel 100, to increase the insulative properties of the panel 100 by reflecting radiant heat. The foil 106 is adhered to the central portion 102 and extends over the two side portions 104 to provide reflective insulation to these parts too. The foil is not adhered to the side portions 104, to avoid the foil 106 becoming distorted or ripped when the side portions 104 are compressed. The non-adhered section of the foil 106 is illustrated with crosshatching in Figure 2.

The side portions being compressible when the insulation panel 100 is put into place makes the insulation panel 100 easier to install around fixed structures compared to entirely rigid panels. Figures 3 and 4 show steps in a process of installing the insulation panel 100 in a wooden stud wall made up of vertical studs 304 and horizontal bottom and top plates 306, 308. One of the wooden studs 304 has a slight curve which would be difficult to accommodate with ordinary rigid insulation. The panel 100 may also be used to insulate floors and ceilings.

The first step in the installation process is selecting an appropriately sized insulation panel 100 for the stud wall 302. The panel 100 that is selected has an uncompressed width *w* that is larger than the largest spacing *s* between the studs 304 and has a depth which is equal to or narrower than the depth *d* of the studs 304. The largest panel meeting these requirements is used so that the central PIR portion takes up most of the space to be insulated, as it provides more effective insulation than the side portions.

Next, the panel 100 is cut to length, to match the height *h* of the studs 304.

The cut panel 100 is then put in position between two studs 304, as shown in Figure 4. Pushing the panel 100 into place causes the side portions 104 to compress, conforming to the space between the studs so that no uninsulated gaps remain. Because the foil facing 106 is not adhered to the side portions 104, it is not compressed and will slightly overlap the studs 304 at the side of the insulation. Installing a cut panel 100 in a single step like this can save a lot of time compared to needing to manually fill gaps after installing conventional PIR panels.

In some situations, the side portions 104 conform as the panel 102 is pushed into place. However, in some installations it may be more convenient to position the panel 102 in place first and then allow the side portions 104 to conform to the surrounding space. For instance, a user may pre-compress one or both side portions before putting the panel 100 into place with a tool such as the L-shaped tool 500 shown in Figures 5 and 6. The tool is used to compress a side portion 104 inwards towards the central PIR portion 102, making the panel 100 narrower. The panel is then positioned between the studs and the tool 500 withdrawn to allow the side portion 104 to expand into the space adjacent the central panel 102.

In both methods, the deformable side portions 104 are advantageously able to adopt a range of sizes during installation between a maximum size (when uncompressed) and a minimum size (when fully compressed, typically around 20%–30% an uncompressed size). Across this range, the depth of the side portions 104 (i.e. their thickness perpendicular to the plane of the panel) does not appreciably increase when compressed, avoiding the need to trim away any material after installation.

Claims

1. An insulation panel comprising:

   a rigid central portion; and

   integral deformable side portions on each side of the central portion configured to conform to spaces adjacent the central portion;

   wherein the central portion comprises a polyisocyanurate core faced with a metal foil.

2. The insulation panel of claim 1, wherein the side portions comprise polyurethane foam.

3. The insulation panel of claim 2, wherein the sides include 40%–50% polyurethane foam and 50%–60% mineral wool.

4. The insulation panel of claim 2 or 3, wherein the metal foil extends over the side portions.

5. The insulation panel of any preceding claim, wherein the panel is more than 10 cm thick.

6. A method of installing the insulation panel of claims 1–5, the method comprising:

   cutting the central portion and the side portions to a desired length; and

   installing the insulation panel between two surfaces by conforming the side portions to the space between the central portion and the two surfaces.

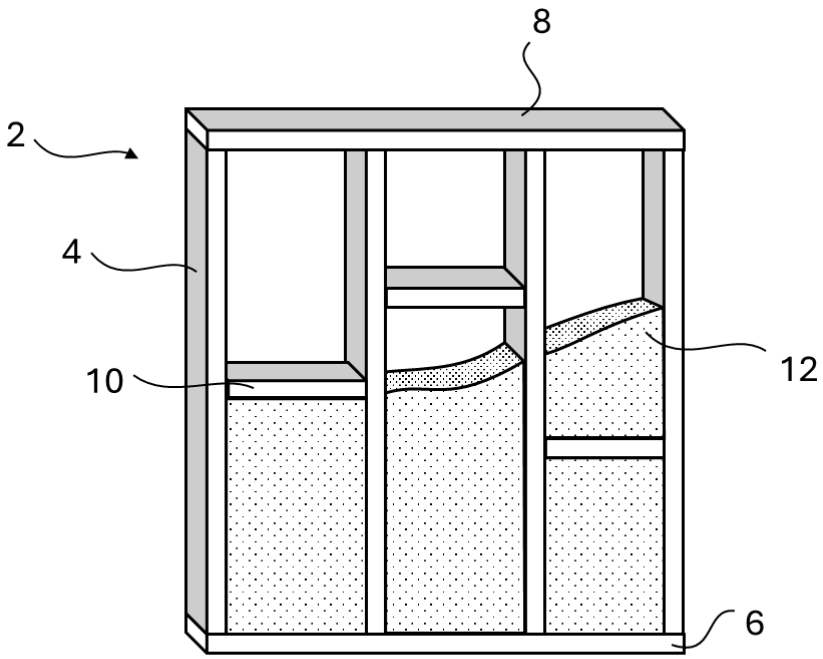


Figure 1

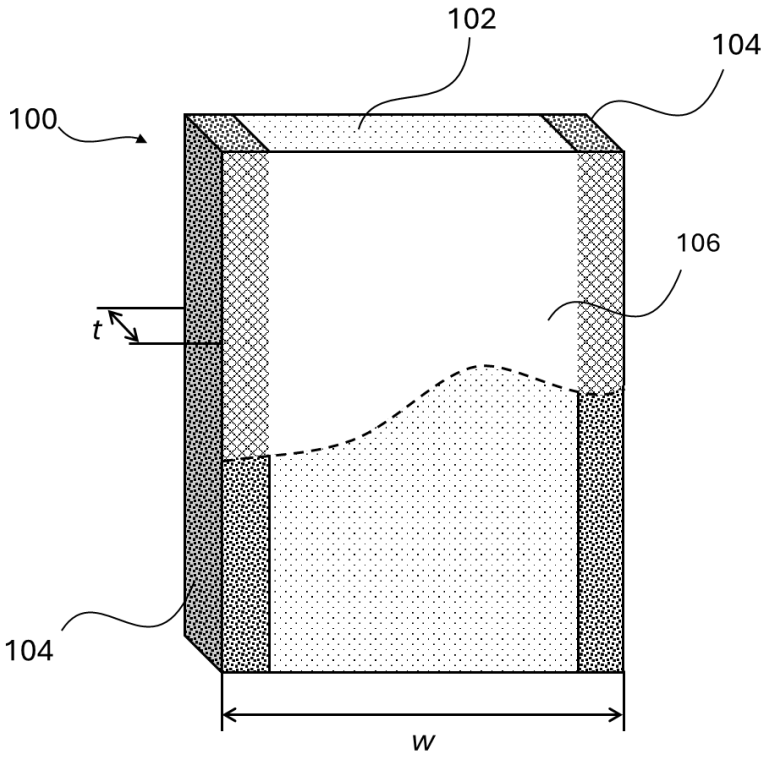


Figure 2

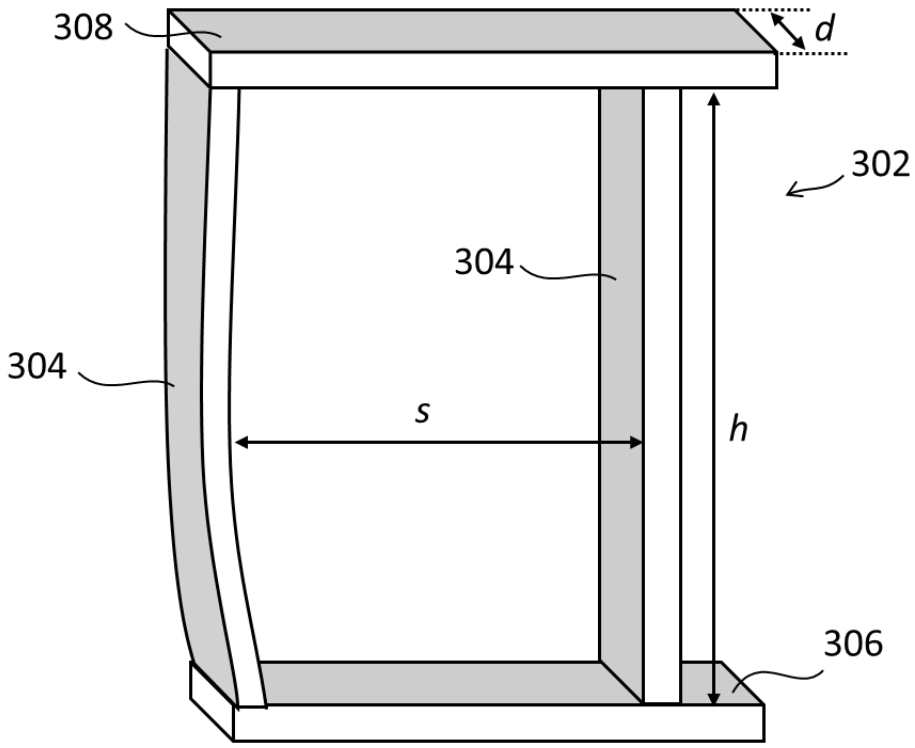


Figure 3

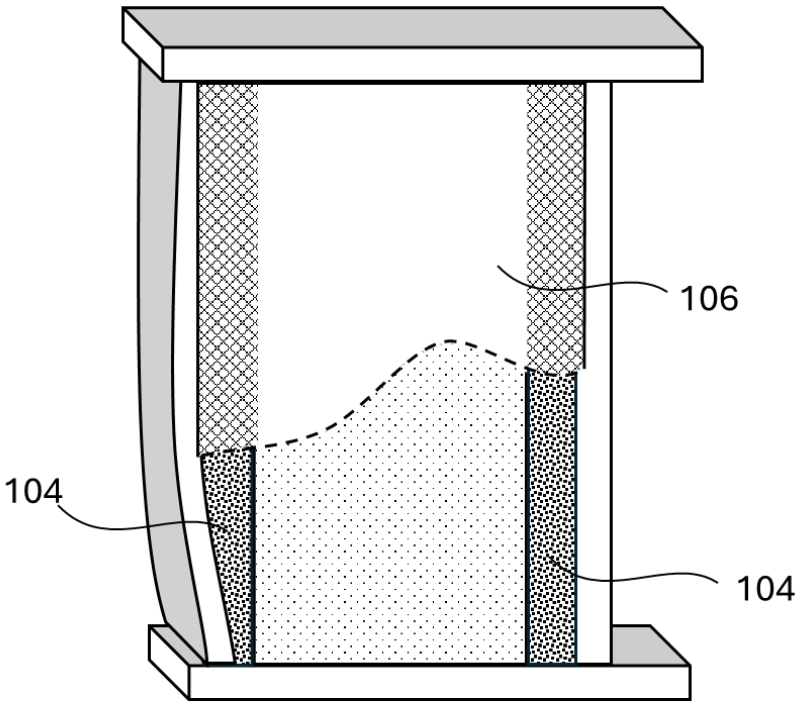


Figure 4

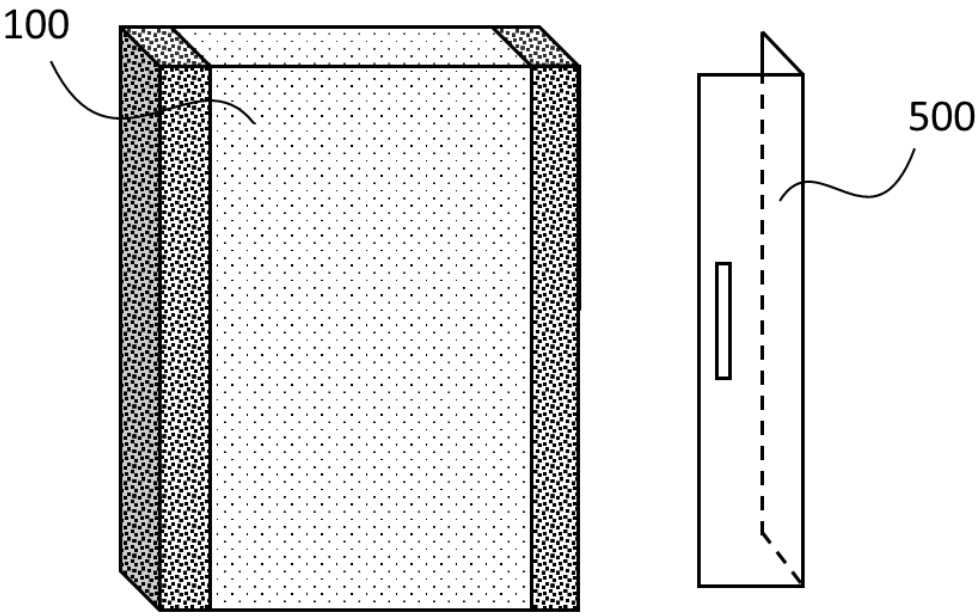


Figure 5

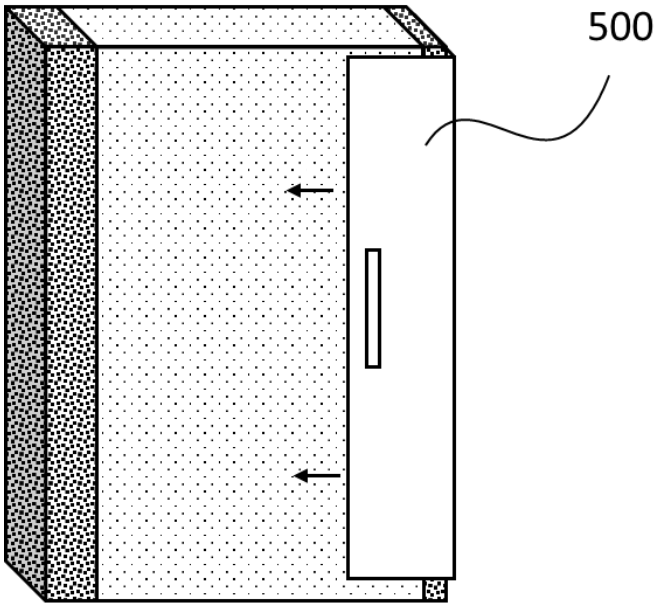


Figure 6

Document B: EdgeFlex marketing material

EdgeFlex marketing material – published online 4 January 2025

Build-It UK is pleased to announce the launch of its new insulation product: EdgeFlex.

EdgeFlex insulation boards allow you to combine the thermal efficiency of rigid PIR insulation with the installation flexibility of expanding foam, but without any messy clean-up.

An EdgeFlex insulation board is a standard foil-faced PIR panel to which two fillable pockets are added on the two long side walls of the board. Each pocket is made from a lightweight plastic membrane and has multiple filler injection ports. These are one-way valves into which polyurethane foam can be injected to cause the membrane to expand outwards and fill any space adjacent the insulation panel. The plastic membrane contains the foam to prevent spills or overflows.

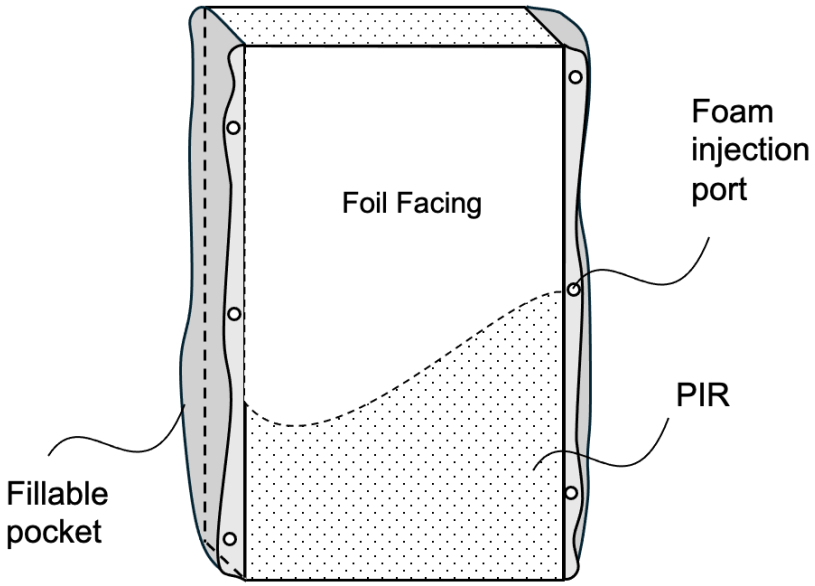


Figure 1

The unique expanding pocket design enables PIR insulation to be installed easily and effectively, even by beginner users and without specialist tools. The plastic pockets mean that there is no need to clean up foam overspills.

EdgeFlex insulation is specifically designed for easy installation in wooden stud walls.

To install an EdgeFlex insulation board in a stud wall, first select the appropriate size board for your stud wall. EdgeFlex is available in a variety of widths to suit standard stud spacings of 350 mm, 400 mm and 450 mm. Each side pocket is capable of filling up to 30 mm of space adjacent the PIR centre, conveniently filling in any gaps where the stud spacing fluctuates. All widths of EdgeFlex are available in a variety of thicknesses to suit different wall constructions, including 50 mm and 100 mm.

Nominal stud spacing (mm)	Width of PIR centre (mm)	Maximum width (fully filled pockets on both sides) (mm)
350	330	390
400	380	440
450	430	490

Document B: EdgeFlex marketing material

The next step is to cut the length of the EdgeFlex insulation board to match the height of the wall. EdgeFlex boards are designed to be cut easily with a standard handsaw. Once cut, seal the cut end of each side pocket with the provided adhesive.

Next, position the EdgeFlex insulation board in the wall between adjacent vertical studs. There should be less than 30 mm gap on either side of the central PIR section.

The next step is to fill the side pockets with expanding polyurethane foam using one or more of the injection ports. The injection ports are one-way valves, which do not allow foam to flow back out of the pocket. The injection ports are compatible with all standard cans of expanding polyurethane foam.

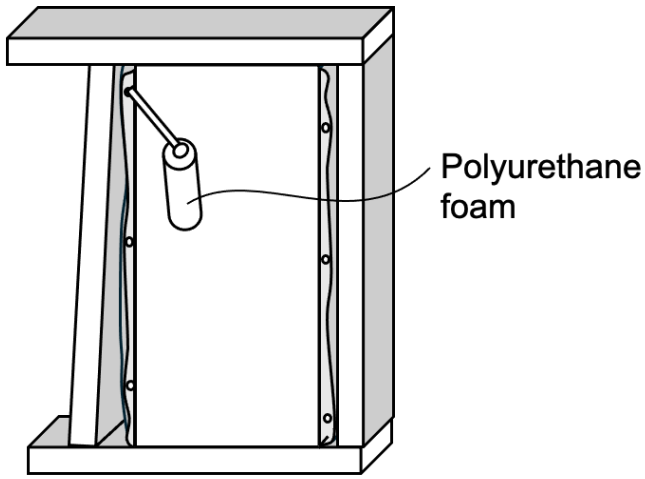


Figure 2

Filling the pockets with expanding foam will cause them to expand and fill the space adjacent the PIR centre. The flexible membrane allows the foam to fill in any uneven or curved sections of the studs so that no air gaps are left behind. The membrane prevents any overspilling of the foam and is designed to resist any expansion forward out of the space to be insulated.

Finally, once the expanding foam has set hard, it is advised to apply adhesive aluminium foil tape over the top of the filled pockets to add additional reflective insulation. Build-It UK supplies a wide variety of standard aluminium foil tapes that can be used for this purpose.

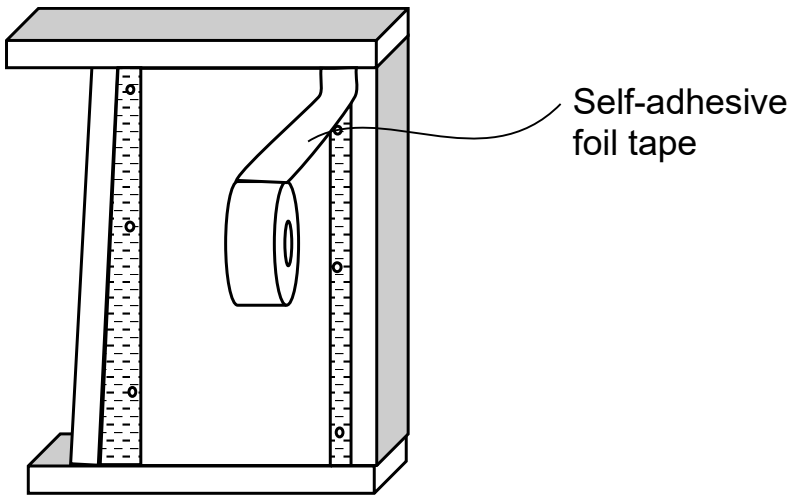


Figure 3

Document C: DIYhelp forum post

Extract from DIYhelp.eu/forums – *Snapshot dated 15 February 2016*

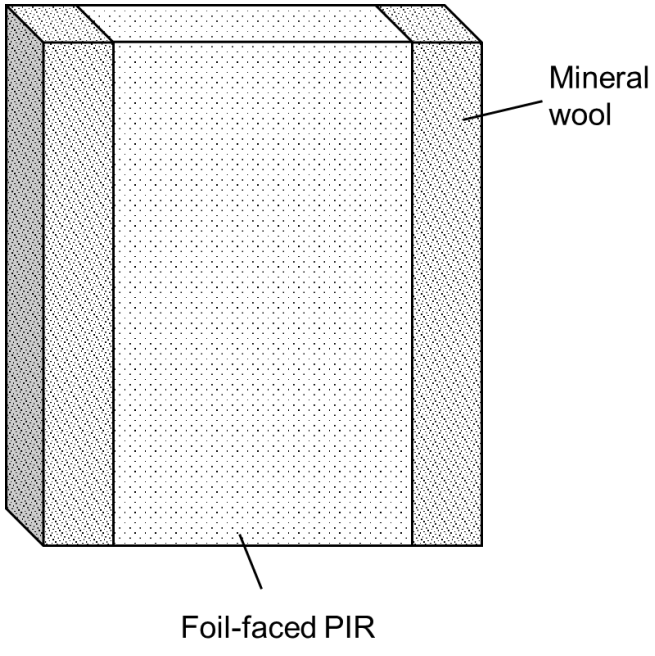
Fatima H
22:04 10 February 2016
I'm currently trying to add some insulation to my garden room as it gets very cold in the winter. I'm having some trouble fitting rigid PIR insulation boards into the stud wall. I am really struggling to cut the boards to a consistent width that matches accurately the space between the studs. Does anyone have any ideas?

Bob the brickie
22:34 10 February 2016
This question comes up a lot. I've worked on building sites for 30 years and the classic method is just to try and cut the rigid boards as best you can and then try to fill any remaining gaps with expanding polyurethane foam from a can.

You use the cans of expanding foam by positioning the nozzle of the can in any gaps between the panel and the wood and spraying out a small volume of foam, which then expands to fill the entire gap. The foam quickly sets to be as rigid as the rest of the insulation itself. It works well, although it can be a bit time consuming and messy to clean up afterwards, because the foam expands in all directions, including out of the gaps.

Noah S
09:01 11 February 2016
I agree with Bob. I can't think of a better method than just filling the gaps with expanding foam. There are hundreds of old videos online showing you how to do it. If you are really struggling, maybe you could just use flexible mineral wool in place of the rigid insulation boards. It isn't as insulative but it is much easier to fit (and cheaper).

Fatima H
13:14 15 February 2016
Thanks everyone. I ended up cutting the boards to be a bit too narrow and then gluing about 3cm of wool insulation onto both sides. I can then just push them into place with the wool compressing down to the necessary size to fill nearly all of the gaps. The wool bulges out the front a bit when the gap is small, so there is still a bit of trimming to do, but it is still so much quicker and easier than using expanding foam! I took a photo as I was doing it earlier today:



Spare set of claims

Claims

1. An insulation panel comprising:

   a rigid central portion; and

   integral deformable side portions on each side of the central portion configured to conform to spaces adjacent the central portion;

   wherein the central portion comprises a polyisocyanurate core faced with a metal foil.

2. The insulation panel of claim 1, wherein the side portions comprise polyurethane foam.

3. The insulation panel of claim 2, wherein the sides include 40%–50% polyurethane foam and 50%–60% mineral wool.

4. The insulation panel of claim 2 or 3, wherein the metal foil extends over the side portions.

5. The insulation panel of any preceding claim, wherein the panel is more than 10 cm thick.

6. A method of installing the insulation panel of claims 1–5, the method comprising:

   cutting the central portion and the side portions to a desired length; and

   installing the insulation panel between two surfaces by conforming the side portion to the space between the central portion and the two surfaces.