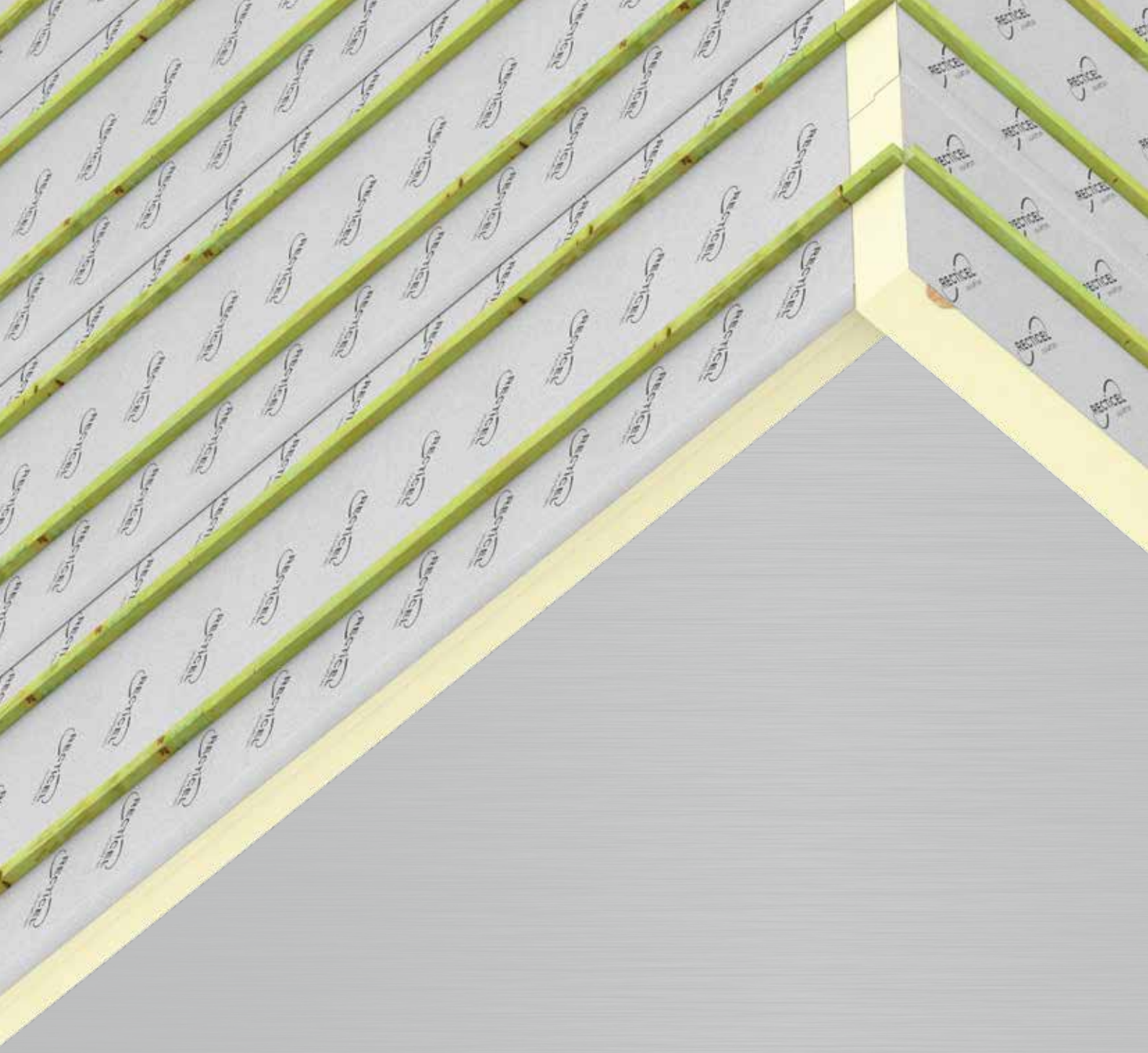
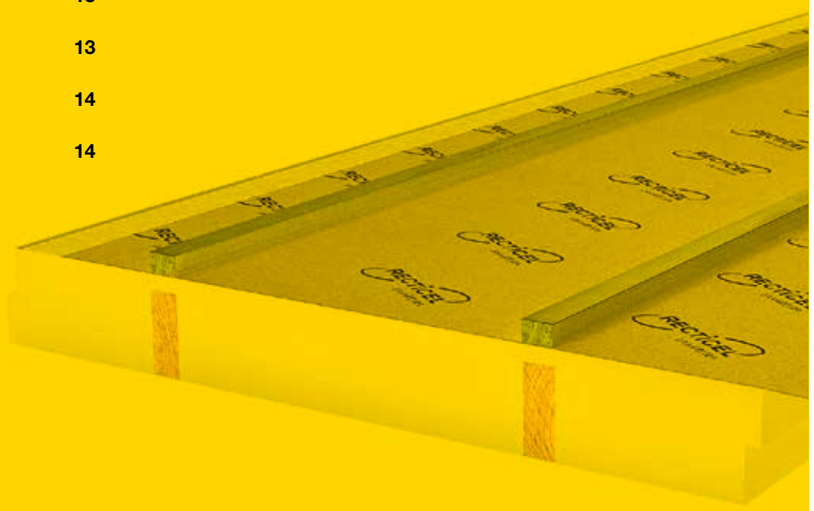


installation instructions L-Ments®

RECTICEL insulation

Contents



General

Read these installation instructions carefully before installing L-Ments® panels. Incorrect installation and/or the use of unsuitable tools can have undesirable effects on the characteristics of the panels or on the whole roof structure.

If there are obvious defects in the panels, stop the installation and contact Recticel Insulation. Recticel Insulation accepts no liability for panels with obvious defects that are nevertheless installed.

We advise you to start the installation only with a layout plan. In this way the panels will be optimally configured to integrate cut-outs (for example, roof windows) and you will limit waste.

Safety

When sawing, cutting, drilling, nailing or carrying out similar activities, appropriate personal protective equipment and safety measures, in accordance with the applicable safety regulations, are required. It is forbidden to install or handle panels above or in proximity to a naked flame or heat source.

Application

L-Ments® panels are self-supporting and thermal insulating panels designed for use in inclined roofs (slopes from 15° to 60°) with a slate or tile finish and in buildings with a climate class rating of I, II or III.
For situations where the climate rating is IV, such as a swimming pool, an independent study must be carried out.

Storage

To avoid extra costs and to be able to make the most of the insulation layer and vapour control layer, you must handle the panels carefully. Store them completely under cover (such as film) in a dry, well-ventilated area. We advise a minimum distance of 150mm between ground level and the lowest panel. This is also regarded as sufficient protection against complete or partial immersion of the lowest panel. If there are indications that this distance is not sufficient, take appropriate measures. The supports may not stand more than 1,500mm apart from each other and must not be more than 1,000mm from the start or end of a panel.

Fit an extra spacer under the top panel to create a gradient. In this way any rain water can run off the stack.
The plastic wrap and straps must stay intact until the time of installation.

The packaging itself is not considered to be a sufficiently protective covering.

Do not store any flammable objects on or next to the panels. It is also forbidden to store the panels next to a heat source (for example radiators, heaters, a naked flame etc.).

Installation

Manipulation

To hoist the panels, we advise a hydraulic clamp that is suited to panels without a timber edge.
The clamp must hold the panel somewhat outside the centre, so that the panel has an initial slope.

The panel will then be laid with the help of a crane on the purlins. Place it carefully against the previous panel and ensure a good join between both panels. Where necessary, slightly move the panel over the purlin to achieve a seamless join. Pay attention here to ensure that the lining remains intact.

Never walk under the load or place the load above people or valuable objects.
The observation of these and other applicable safety instructions is the responsibility of the installer.

Installation

The panels are designed to be installed perpendicular to the purlin structure on a sloped roof.

To guarantee a stable roof structure, all of the parts of the construction (purlin structure, joins, supports and the underlying structure) must be sized correctly. The panels themselves do not contribute to the stability of other parts of the construction.

The panels must join perfectly to the internal surface. On the outer surface, bind the seam with an expanding layer of flexible PU foam and make it watertight with the overlapping sarking membrane. The system is only completely watertight if the rainproof roof finishing (tiles, slates etc.) are placed on the panels.

If you must halt the works early, make the joints watertight on the outer surface and protect the panels that have already been laid against the weather (for example with a tarpaulin).

Where L-Ments® panels join to another structural element or insulation, you must ensure the continuity of the water-repellent layer and the insulation shield. Apply an airtight strip for this purpose (for example a swell seal mastic/film in or on the joins).

Furthermore, where the joining seams cross the purlin structure apply sealing film or sealing tape. When finishing on the internal surface, these can be used to connect to Rectitape® insulation tape.

Figure 1: acoustic insulation at the height of the wall plate, intermediate purlin(s) and ridge beam

Ensure air-tightness at the height of the external walls using sealing film. This connects the vapour and air control layer of the L-Ments® panel and the vapour and air control layer of the wall to be fitted (usually plasterwork).

To minimise sound transmission, you can fit an additional flexible strip at the support points for the L-Ments® panel on the underlying construction (wall plate, intermediate purlins, ridge beam, supporting walls, end faces, etc.). Where desired you can also fit acoustic insulation to the L-Ments® panel finish on the internal surface.

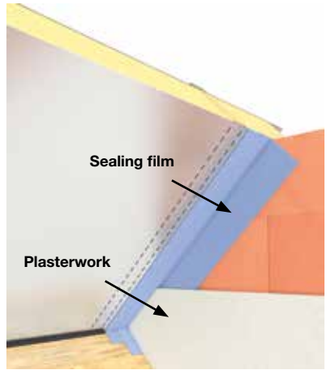


Figure 2:
join water-repellent layer roof – wall

Overlay

Fit the panels and make the structure such that you have achieved an overlay of at least 100mm on the wall plate. Where using intermediate supports and a duplicate ridge beam, the minimum overlay is 60mm.

The wall plate must be chamfered to create a complete overlay. For the ridge you should use a double ridge beam.

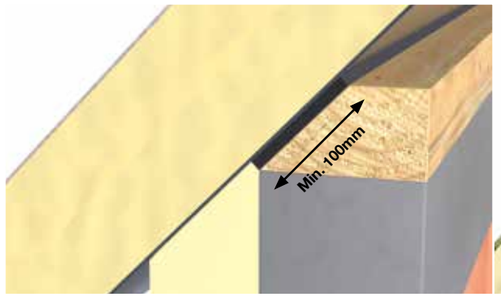


Figure 3: minimum overlay on the wall plate

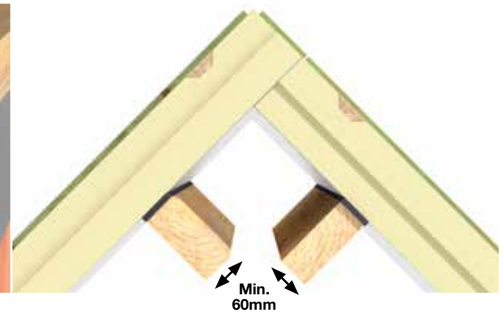


Figure 4: double ridge beam

Span

Maximum span for 2 support points

Roof gradient	30°	40°	50°	60°
Span	2.78m	2.83m	2.91m	3.00m

Maximum span on 3 or more support points

Roof gradient	30°	40°	50°	60°
Span	3.42m	3.48m	3.58m	3.69m

Fastening

To fasten the L-Ments® panels to the roof structure and to distribute the loads perpendicularly on and parallel to the roof surface, use Rectifix® screws. If you fasten the panels with other materials, follow the guidelines from the manufacturer concerned.

As noted previously, the substructure must be correctly dimensioned, and sufficiently strong, to be able to sustain the loads that act on the L-Ments® panels. You must fasten the L-Ments® panels in such a way to the substructure that the forces are correctly transmitted.

To make the positioning of the panels easier, you can install an L-shaped wooden guide to the internal surface of the panels in advance, whereby they hook onto (one of) the intermediate purlin(s). Where carried out with care, the panels lay in place and are immediately fixed in the correct position. In this way you can work quickly and safely.

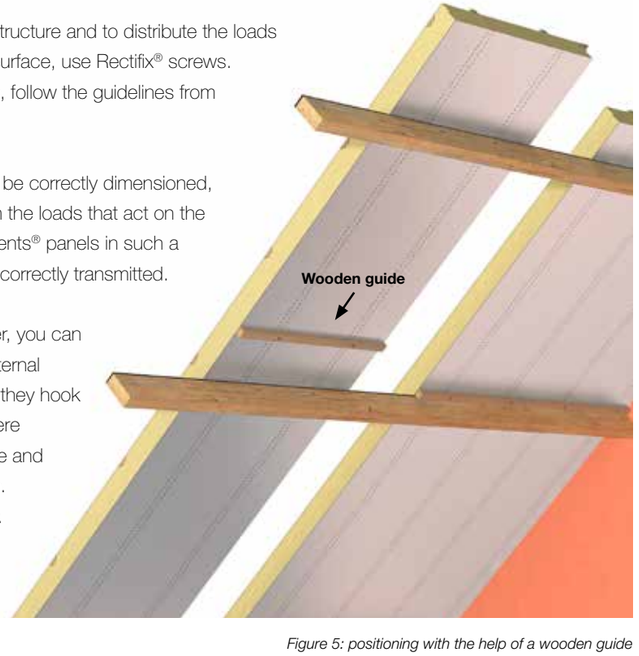


Figure 5: positioning with the help of a wooden guide

Figure 6: minimum distance from the edge for Rectifix® screws

Fastening from the outside

Each time the panel crosses the wall plate, ridge beam and intermediate purlins, fit Rectifix® screws (∅ 7mm, self-tapping) through the batten and underlying integrated wooden stiffener into the substructure.

Use 2 screws per crossing on the wall plate. You should drill the crossings in advance to prevent the batten from splitting. The minimum distance between the screws is 35mm. The minimum distance between the screws and the end of the panel is 100mm.

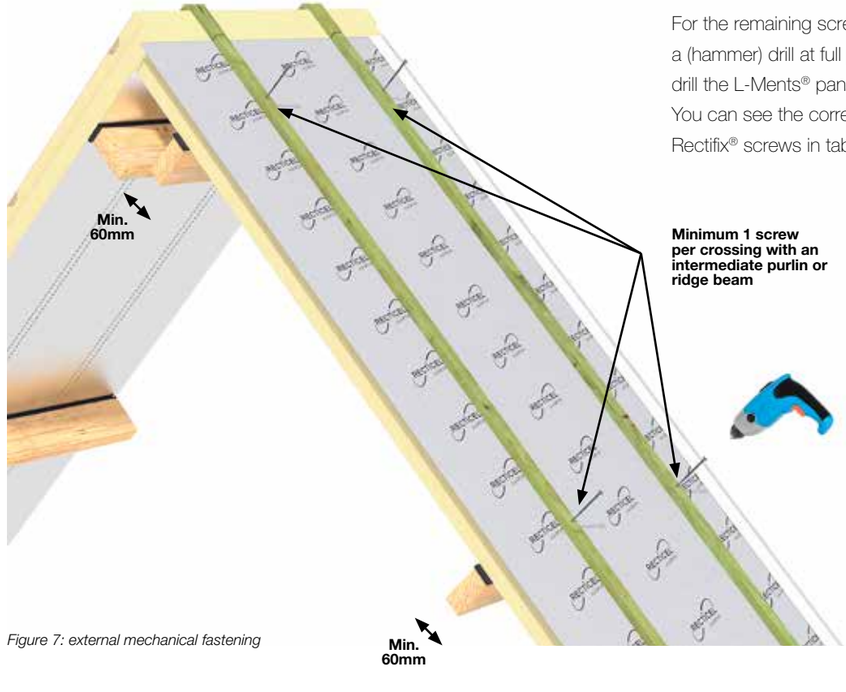


Figure 7: external mechanical fastening

For the remaining screws you can use a (hammer) drill at full power and/or drill the L-Ments® panels in advance. You can see the correct lengths for the Rectifix® screws in table 1.

Table 1: screw length for each panel thickness

Thickness of the L-Ments® (mm)	*Length of the Rectifix® schroeven (mm)*
145	230
160	250
180	270
200	290

Note: If you make a drill-hole that you ultimately do not use, you must fill it (for example with PU foam).

Fastening from the inside

At the intermediate purlin you can use the integrated wooden stiffeners for fastening from inside. In this case an L-shaped profile or timber layer is used to distribute loads perpendicular to the roof surface (for example, from *wind-uplift*).

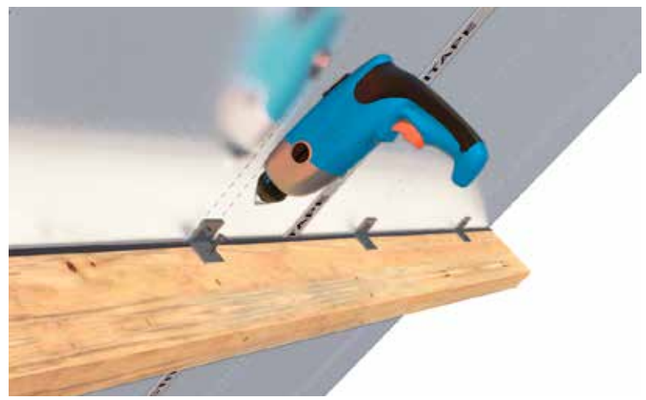


Figure 8: fastening from the inside with an L-profile

Cut-outs

For cut-outs in the roof line (for example skylights), for which you do not have to cut out more than one integrated wooden stiffener per panel (for example the right beam of panel A and the left beam of panel B), we advise you to follow these installation steps:

1. Clearly mark the outline of the cut-out.

a. Vertical edges: with extra battens, which you nail or screw to the integrated cross bars.

b. Horizontal edges: with wooden planks of the same thickness as the battening boards and at least 100mm wide, which you nail to the battens. Fasten these planks mechanically to the integrated wooden stiffeners at least to the adjacent panels with Rectifix® screws (∅ 7mm, self-tapping) of the correct length (see Table 2).

Note: Where the opening is not finished vertically to the roof surface, ensure when installing the horizontal edges that the screws cannot be touched when cutting the opening out (for example by shifting the horizontal edge).

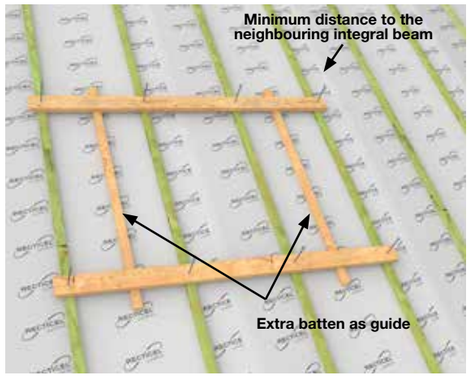
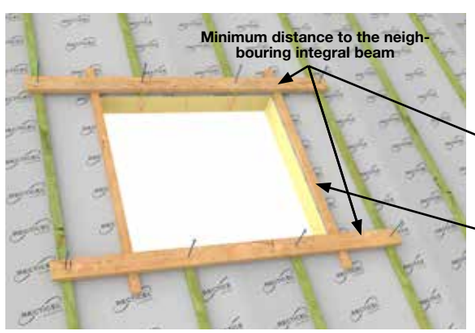


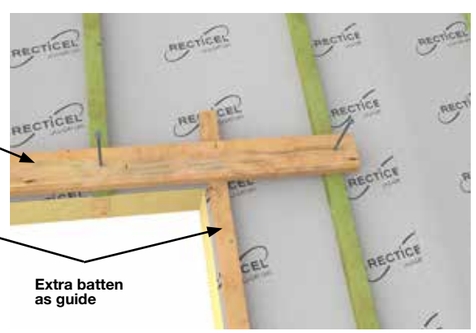
Figure 9: preparing the integration of the roof window

Table 2: screw lengths according to panel thickness for fastening a reinforcing structure at cut-outs

Thickness of the L-Ments® (mm)	*Length of the Rectifix® screws (mm)*
145	150
160	170
180	190
200	210

2. The installed edges are used as guides when cutting away the excess section of the panel. In this way you remove only the minimum amount of insulation and optimise the thermal properties of the roof.





Figures 10 and 11: integration of the roof window

3. Install a wooden frame on the internal side. That provides reinforcement to the cut-out and supports the interior work for the roof window. Ensure that the frame makes no contact with the external reinforcing elements. That way you can avoid a node. The frame consists of beams of the same dimensions as the horizontal edges described in point 1.

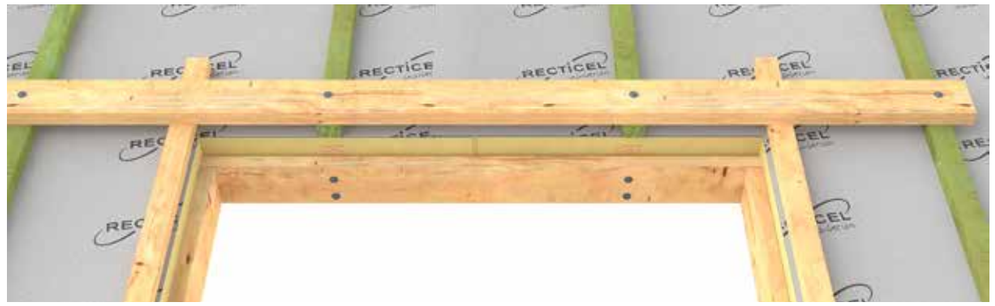


Figure 12: the wooden frame does not form a node and is fastened to the integral beams

On the interior surface, fasten the integral beams to the cut panels to achieve a more rigid whole.
The reinforcement must again be fastened, and at least to the integral stiffeners of the neighbouring panels.

For larger cut-outs contact the technical division of Recticel Insulation for support.

Figure 13: additional reinforcement on the interior surface

Adapters

As noted above, you should create a layout for the installation. By doing so you can minimise cutting waste and the need for adapters.

When cutting the L-Ments® panels, you must always ensure that at least one integral wooden stiffener remains in the adapter piece. Moreover, this integral wooden stiffener must be used to fasten the adapter piece to the purlin structure. This means that you must be able to screw through this wooden stiffener into the purlin structure.

Where you trim the L-Ments® panels to size (both in length and breadth), free the sarking membrane from the panel as much as possible. In this way you keep as much sarking membrane as possible to make the particular join tight. Where this is not possible, use Maxx tape to make a seal possible at the joins.

Finish

Long seams

The long seams must fit perfectly on the internal side of the panel. You will then tape the seams along their length with Rectitape® insulation tape and thereby create a continuous vapour control layer. At the height of the purlins use sealing film or tape to guarantee the continuity of the vapour control layer.

You will finish up with an open joint of approximately 10mm on the outer side when finishing the edges. Fill this with an expanding layer of flexible PU foam. Then make the seam rain-proof by fixing sarking film in place with the double-layer tape available.

In damp weather or rainy conditions, carry out the finishing work directly after installation to achieve preliminary rain-proofing. The rain-proofing of the roof will, however, be created when the roofing has been installed. This must also be carried out as quickly as possible.

Figure 14: the longitudinal joints are covered with an expanding layer of flexible PU foam and covered with the integrated sarking membrane

Ridge joins

Option 1:
install the panels overlapping

The panels can overlap at the ridge to minimise cutting waste. Scrape off the resulting seam.

Note: The upper-most panel will become longer (by approximately the thickness of the insulating layer) than the lowest panel.

Figures 15 and 16: overlapping ridge

A sarking membrane must be placed over the ridge to prevent water entering and accumulating in the seams.

Option 2: chamfer the ends

Chamfer the ends of the panels at the right angle, so that they fit in the ridge join with an opening of approximately 10mm.

Then fill this opening with an expanding layer of flexible PU foam. To cut the chamfer at these ends on site, you can ideally use a sword saw (e.g. Festool IS 330)

Chamfered ends can, although at greater cost, be fitted to the panel in advance at the factory.

A sarking membrane must be placed over the ridge to prevent water entering and accumulating in the seams.

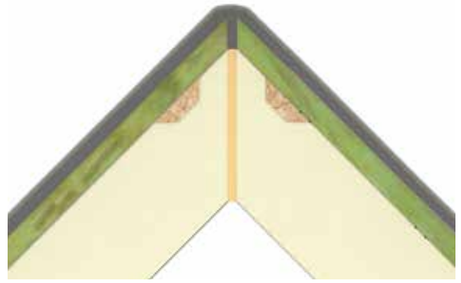


Figure 17: chamfer finished ridge

Sarking membrane

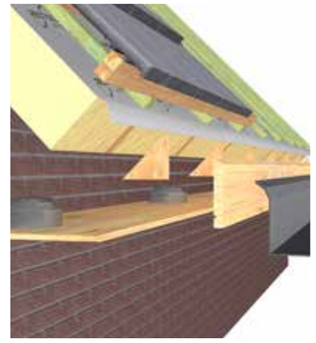
A sarking membrane is always necessary. A sarking membrane has already been fitted to the panel. In this way the long seams are rainproof due to the overlapping of the sarking membrane.

The sarking membrane is glued to the panel in such a way that it can be removed. In this way you can prevent it being damaged when sawing the panel.

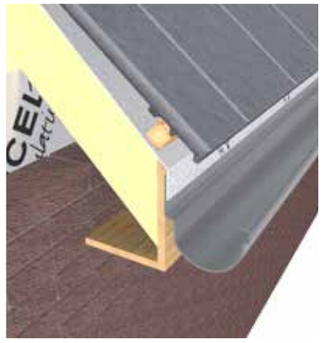
Gutter detail

Place the gutter so that the (small) amount of water that can end up under the roof covering on the sarking membrane can flow to the gutter. To avoid sawing waste, use wooden bobbins to support the gutter. Fasten these bobbins to the integrated wooden stiffeners.

You can also chamfer the panels to offer support to the gutter; use a sword saw to do so (e.g. Festool IS 330) or you can have the panels fitted with a chamfer, although at greater cost, at the factory.



Figures 18 and 19: wooden bobbins can minimise sawing waste



Figures 18 and 19: Wooden bobbins can minimise sawing waste

Roof windows

Read more about this in the section on cut-outs (page 8). To avoid water seeping into the structure, a correct join with the sarking membrane must be achieved.

If the sarking membrane is already fitted to the panel, fit extra drainage above and around the roof window that joins to the sarking membrane. You can unfold the membrane before you cut out the window opening. In this way you can use the membrane afterwards to create drainage.

You can read more information in the specifications from the roof window manufacturer.

Internal finish

The panels satisfy the deflection requirements for each type of internal finish, both flexible and rigid finishes (for example, plasterboard sheets). There are markings on the internal surface to make the internal finish easier. Note that the markings are only indicative. Always check for yourself that the trellis is effectively fastened to the integrated wooden stiffeners.

The trellis offers the ability to create a cable cavity or to optimise acoustic performance.

Figure 21: possible internal finish with cable cavity

Battens

The battening boards must be suitable for use in combination with battens with a centre-to-centre distance of 600mm (for example 32 x 36mm). Nail or screw the battening boards onto the battens.

Roofing materials

You will find the specifications for your roofing material in the manufacturer's instructions. You must always make the necessary provisions for vermin, such as bird spikes.

Party wall

Ensure that sound transmission is limited at the party wall. To do so use a vibration-absorbing and thermally-insulating material (e.g. mineral wool).

Add an extra batten to support the roofing battens. Fill the space between the L-Ments® panels and the space between the roofing battens with a thermo-acoustic material. Add an extra layer of sarking membrane between the two layers of thermoacoustic material.

For specific acoustic requirements, an additional acoustic study should be done by a recognized engineering office.

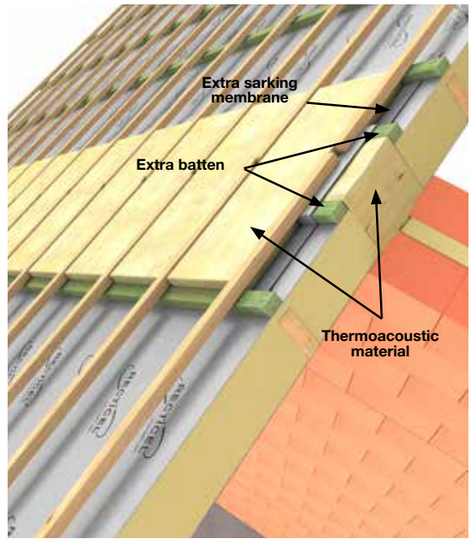


Figure 22: party wall in detail

Transverse seam

Avoid transverse seams as much as possible. If, however, transverse seams occur in the roof surface, these must be supported by a purlin or other support point, as close to the ridge as possible. A flat or doubled purlin must be used to create sufficient overlay.

When fastening the panels to the support structure, take into account the minimum distances from the edges to prevent splitting.

To correctly transfer shearing forces, fit a strip of wood in the joint. This strip must not extend beyond the height of the integrated wooden stiffeners. Then fill the joint created with PU foam.

You should provide extra fastening for the panels over the joint with additional battens. You can fasten them to the purlin structure in the integrated wooden transverse stiffeners with nails and Rectifix® screws.

Note: If you end up with two panels on two supports with a transverse seam, instead of one panel on three supports, you should also use the respective permitted spans according to the dimensions of the substructure.

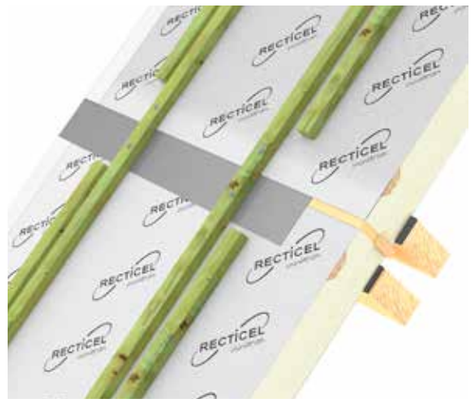


Figure 23: finish with a transverse seam. The best is to fill the space between the two counterbattens with a piece of a counterbatten that you reattach through the panel to the purlins.

Protection after installation

Install the roofing as soon as possible after installing the panels. In this way you will minimise the exposure to weather conditions. If you cannot do so, then you should ideally fit a tarpaulin over the L-Ments® panels and protect the entire structure.

At the top of the gutter you must also protect the exposed wooden surface of the integrated wooden stiffeners against the weather. You can do so by protecting the wood with an appropriate paint or bitumen paste, or by covering it with cladding.

Repairs

Always contact Recticel Insulation in the event of damage.

04/2015

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RECTICEL insulation