LINZMEIER
Insulate with system

Exterior wall insulation

LINITHERM®

Installation

General information and examples for the installation of exterior wall installation LINITHERM PAL W

developed and sustainably produced in Germany
LINZMEIER 100 % Made in Germany

www.Linzmeier.de

Preliminary remark

Delivery

LINITHERM insulating elements are delivered in packages. Great care must be taken when unloading and transporting on the building site. The elements must be stored flat on level, and dry ground. During all work (installation, cutting to size, etc.), attention must be paid that no damage is done to the elements. The insulating composite panels must be protected from moisture penetration during storage, transport and installation.

Safety provision

The safety regulations on the building sites must be observed.

Rules of construction technology

LINITHERM insulation systems are high-quality products for the most various insulation solutions.
The elements are manufactured on modern production facilities in top-quality, flawless condition. In order to achieve the benefit of an optimal insulation solution, proper installation of the product is essential.
Our installation-related recommendations schematic information for the buyer and do not claim to be fundamentally valid, nor do they substantiate an entitlement to a guarantee.
Each building offers different prerequisites; therefore the general procedure is to follow the rules of construction technology for each specific building.

Tools

For the installation of LINITHERM insulation elements only a few tools are necessary, which are usually available on every construction site. These are e.g. portable circular saw, foxtail, level with spirit level, foam gun, drilling machine, screwdriver, etc.

Principles

The following points must generally be observed during the installation of the LINITHERM elements:

- The elements must be fully pushed together in longitudinal and transverse direction, in order to achieve a full-surface and consistent thermal insulation layer. Cross joints should be avoided.
- Any damage must be properly repaired (e. g. by foaming, levelling, …).
- Back flows between wall and insulation board must be avoided.
- All preparatory work (e. g. installation of cables etc.) should be finished by the beginning of the installation of the LINITHERM insulation elements. (e.g. closing off cavities, making wall breakthroughs, removing loose plaster layers, laying electrical cables, …)
- The elements have to be mounted with the printed stamp to the supporting structure.
- The facade cladding should be applied immediately after the installation of the elements.

These installation instructions refer to the application area of external wall insulation from the outside. Through restoration of this part, other parts can be affected, e. g. the building physics of the complete building. In case of doubt, an appropriate expert/building physics needs to be consultes on site.

Various important detailed points are stated on the following pages.
Our suggestions only represent a limited selection.
The planning requirements and specialised regulations, however, must always be adhered to.

Installation options

LINTHERM PAL W can be installed in various ways:

- Installation of the elements directly on the already plastered brickwork (renovation). The brickwork must be examined in advance to establish whether the brickwork and the plaster are still sound. Any faulty points must be repaired beforehand.
- Installation of the elements directly on the unplastered brickwork/concrete (new building/renovation).
- Installation of the elements as a back-ventilated facade or as core insulation for double wall masonry (new/old building).
- Possible underground for installation: Concrete, solid brick, sand-lime brick, perforated sand-lime brick, solid block of lightweight concrete, vertically perforated brick, wooden structures, etc.

Linzmeier Bauelemente GmbH
Industriestraße 21
D-88499 Riedlingen
+49 (0) 7371 1806-0
Info@Linzmeier.de
Schortentalstr. 24
D-07613 Königshofen/Thüringen
+49 (0) 36691 722-0
www.Linzmeier.de

BE / EN / VA PAL W
2020-12 / pdf
Subject to changes

Fire protection at back-ventilated curtain facade

- For thermal insulation of back-ventilated exterior wall claddings, only standardized or building authorities approved insulating materials, which meet the requirements of DIN 4108-10 type WAB, can be used.
- The fire protection requirements depend on the building class and the respective state building regulations.
- For building classes 1 to 3, no special fire protection requirements need to be observed. Only building materials that comply at least with the building regulations' requirement »normally flammable« (B2) may be used.
- Increased fire protection requirements apply to building classes 4 to 5. Only building materials that at least comply with the building regulations' requirement for »low flammability« (C-s2, d0) may be used. In any case, it must be checked whether there are increased fire protection requirements, which may require special precautions or the use of non-combustible materials.
- Requirements of the respective national building regulations and special approvals must be observed.

Fire protection for double wall masonry

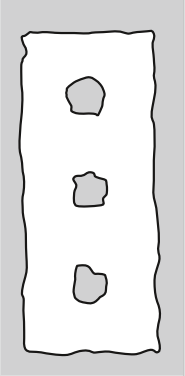
- For building classes 1 to 3, no special fire protection requirements need to be observed. Only building materials that comply at least with the building regulations' requirement »normally flammable« (B2) may be used.
  For classes 4 to 5, fire protection requirements must be observed.
- The clear gap between shells must not exceed 250 mm when using insulating materials made of rigid polyurethane foam.
- No fire protection measures are required for finger gap versions.
- No additional fire protection measures are required for shell gaps < 100 mm. For shell gaps > 100 mm, fire barriers must be installed either horizontally all around every second floor or alternatively laterally and around openings such as windows or doors.
- Insulation strips of mineral wool (A1 according to EN 13501-1 and melting point > 1000 °C) at least 200 mm high must be used as fire protection strips, which must be pressed tightly into the gap and fastened to the supporting shell.
- Planning and execution are regulated in DIN 4102-4.

AW–A / AW–HF

AW–A

Mechanical attachment

Fig. 1



General installation information

The elements must generally be fixed mechanically. During installation, special care must be taken to ensure that the insulation boards cannot be back-flowed.
This can be achieved, for example, by gluing the element to the substrate over the entire surface (apply adhesive with notched trowel), or by using edge bead + point bonding (Fig. 1) or, if necessary, other suitable methods.
The adhesive can be applied directly to the aluminum foil. Bonding can be done using mineral adhesives (e. g. SK leicht [Company Schwenk or Akurit]) or PU insulation adhesives. The substrate must be checked in advance for load bearing capacity. Unevenness in the wall can be compensated with the adhesive if necessary. A thicker application of adhesive will extend the setting time! The application instructions of the adhesive manufacturer must be observed separately here!

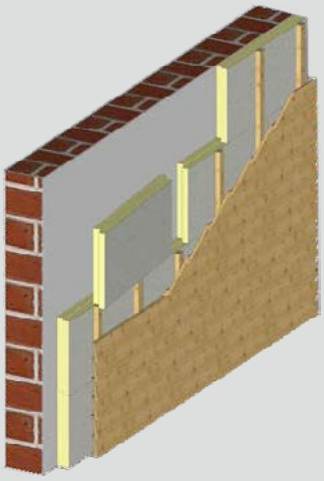
As an alternative to gluing, the edges can also be sealed separately using pre-compressed sealing tapes (base point, building corners, windows, doors, etc.).

If the elements are perforated (e. g. cables of the exterior lighting), the perforating elements need to be connected tightly (foam the cavities and, if necessary, tape them with e. g. butyl adhesive tape).

After checking the load-bearing capacity (wall/plaster), the elements can be placed.

AW–HF

Mechanical attachment



External wall insulation from the outside for rear-ventilated façade

The connection of the external insulation to the perimeter insulation from the cellar must be free of thermal bridges (foam out any cavities). For placing the insulation elements, the commercially available base profiles for ETICS systems can also be used, which are aligned and dowelled on before starting installation work.

The first row of elements is mounted horizontally on the wall and aligned.

Attachment to the wall is carried out using one of the two adhesive methods mentioned above. At the end of the first row, the last panel is cut into length and mounted. The resulting section is used as starting panel for the next row (endless laying).

Make sure that there are no cross joints. The cross joint should be offset by at least 30 cm. Laying the insulation boards in several layers is not allowed.

Cavities and missing parts are to be filled with foam accordingly. Cut off any remaining, hardened foam and tape it off if necessary.

Then the mechanical fixing is done using the base lath, which serves as a substructure for the facade cladding. Depending on the façade cladding, a façade sheet may be necessary.

Depending on the particular substrate (wood, concrete, brick, etc.), suitable screws or dowels must be used for this purpose (selection e. g. via the Fischer enquiry form). For a functioning back-ventilation, the distance between the insulation and the façade cladding must be at least 20 mm. The ventilation openings must be at least 50 cm² per running meter of wall.

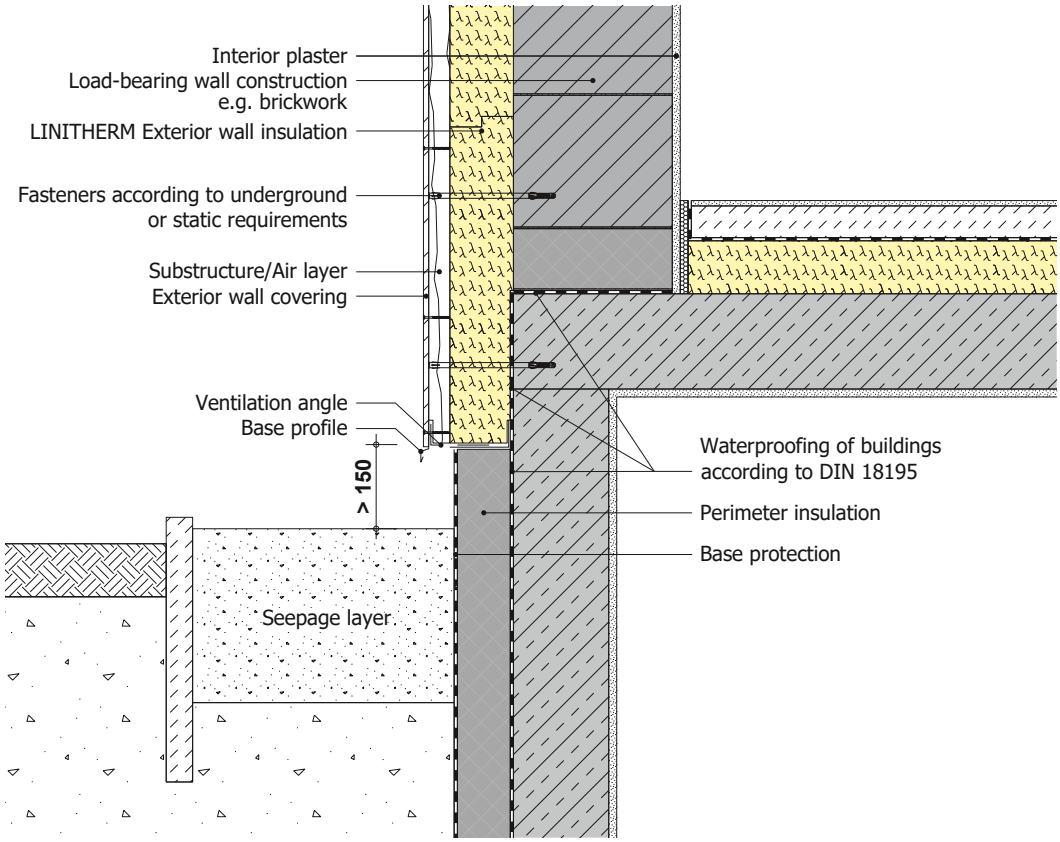
Linzmeier Bauelemente GmbH
Industriestraße 21
D-88499 Riedlingen
+49 (0) 7371 1806-0
Info@Linzmeier.de
Schortentalstr. 24
D-07613 Königshofen/Thüringen
+49 (0) 36691 722-0
www.Linzmeier.de

BE / EN / VA PAL W
2020-12 / pdf
Subject to changes

LINZMEIER
Insulate with system

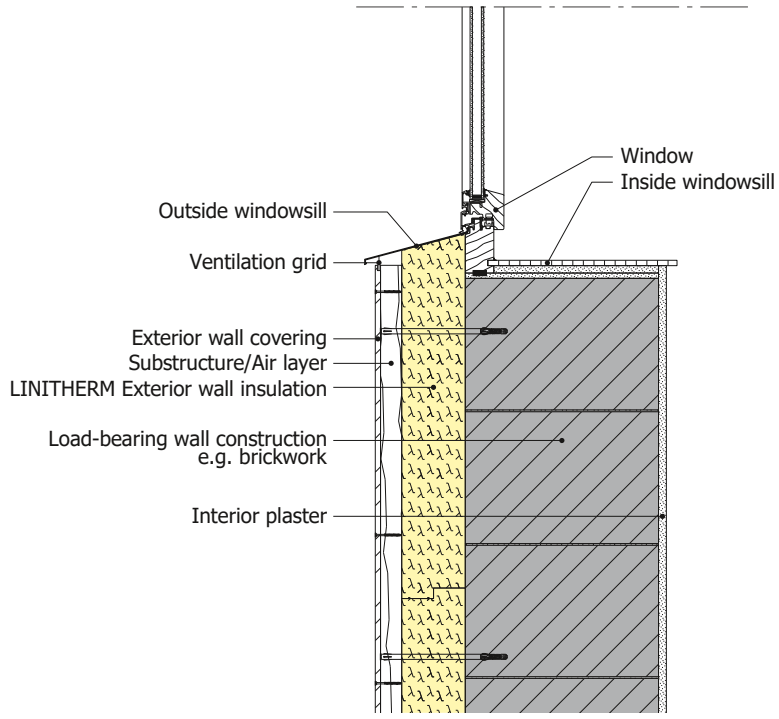
AW–S

Base connection



AW–UF

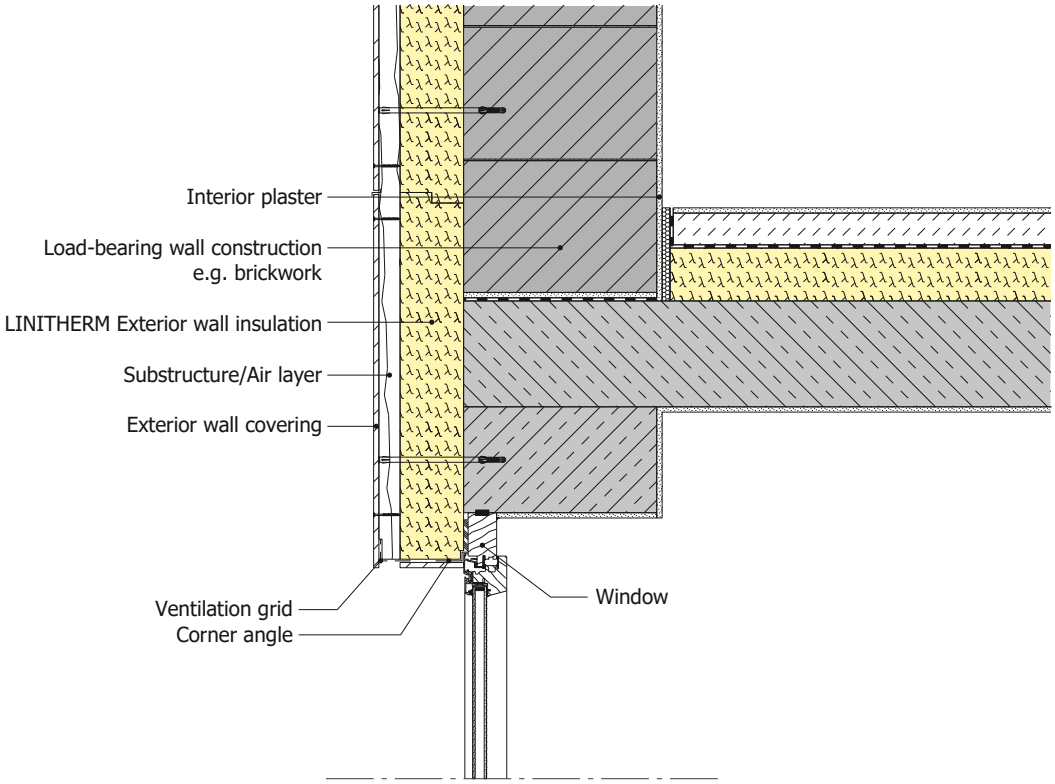
Lower window connection with window sills



AW–OF / AW–SF

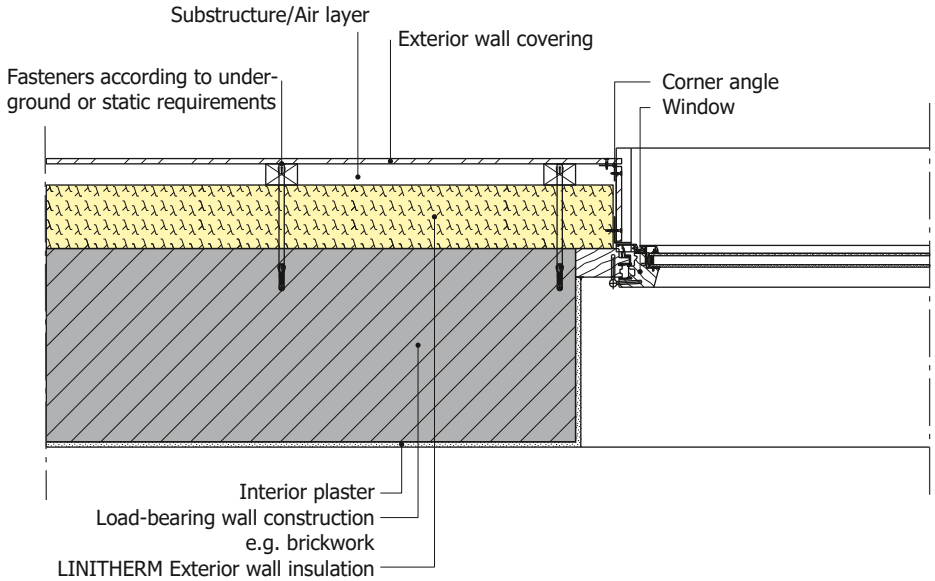
AW–OF

Upper window connection without roller shutter



AW–SF

Laterally window connection

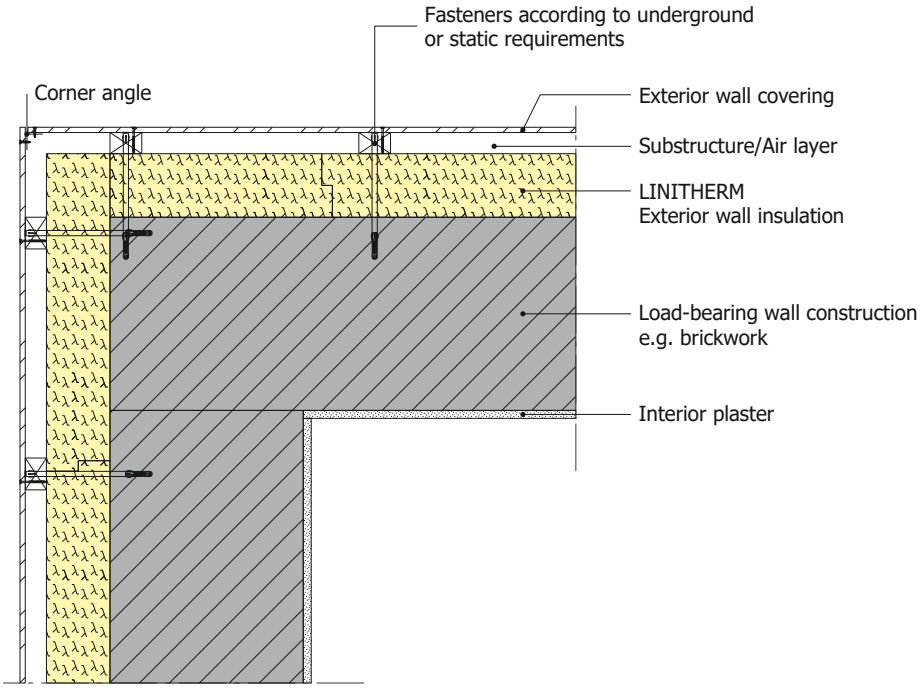


Linzmeier Bauelemente GmbH
Industriestraße 21
D-88499 Riedlingen
+49 (0) 7371 1806-0
Info@Linzmeier.de
Schortentalstr. 24
D-07613 Königshofen/Thüringen
+49 (0) 36691 722-0
www.Linzmeier.de

BE / EN / VA PAL W
2020-12 / pdf
Subject to changes

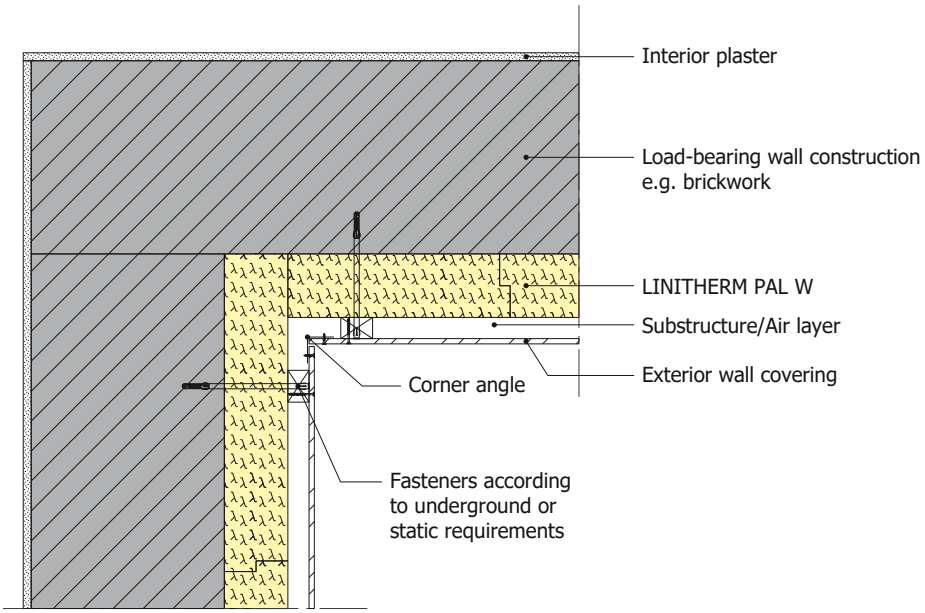
Outside corner connection

AW–AE



Inside corner connection

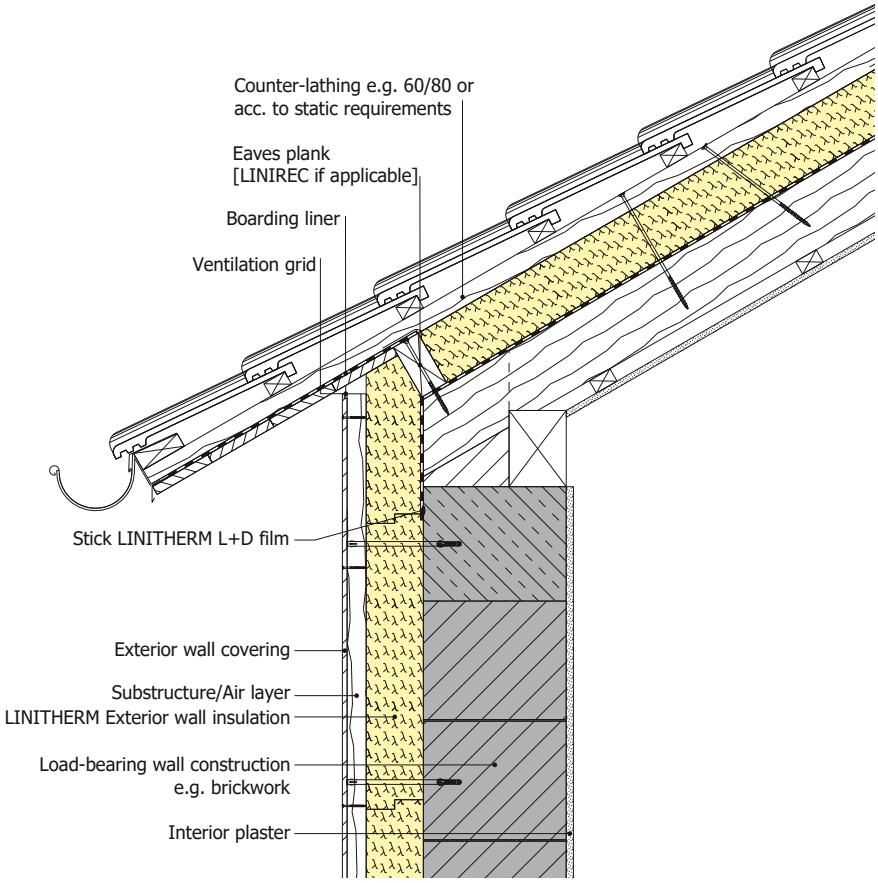
AW–IE



AW–T / AW–O

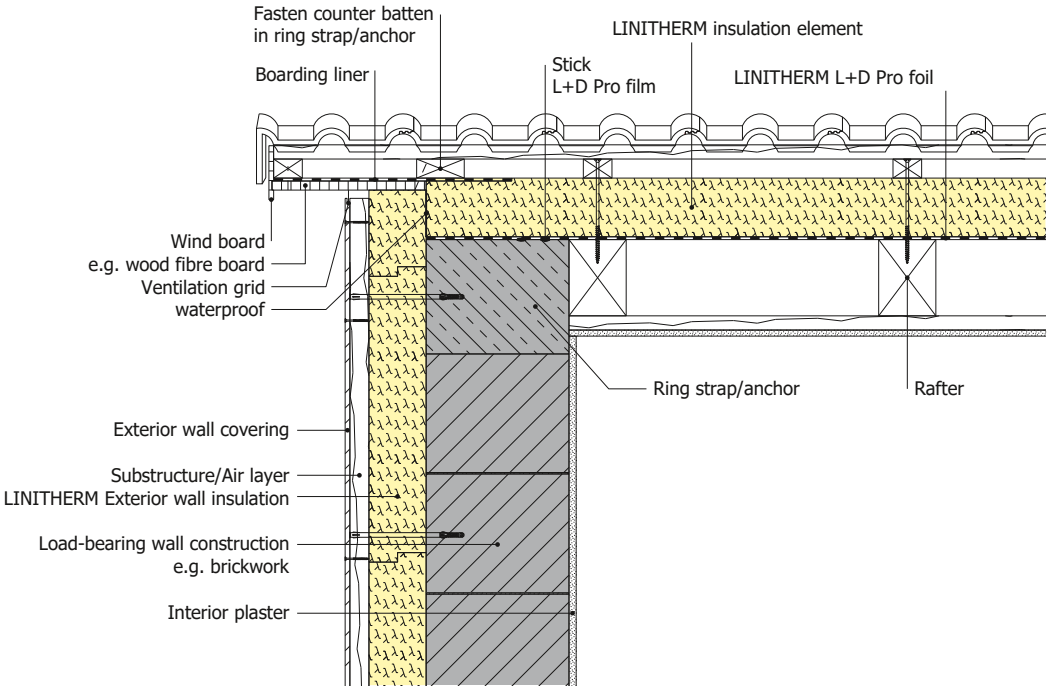
AW–T

Eaves



AW–O

Verge



Linzmeier Bauelemente GmbH
Industriestraße 21
D-88499 Riedlingen
+49 (0) 7371 1806-0
Info@Linzmeier.de
Schortentalstr. 24
D-07613 Königshofen/Thüringen
+49 (0) 36691 722-0
www.Linzmeier.de

BE / EN / VA PAL W
2020-12 / pdf
Subject to changes

External wall insulation for double-wall masonry

In double-wall masonry, the thermal insulation layer lies between the load-bearing inner shell and the non-load-bearing outer shell (facing masonry). DIN 1996-1-1 (formerly DIN 1053) must be observed accordingly. The outer shell serves as weather protection and enables individual facade design. Since wind loads act on the outer shell, it must be connected to the load-bearing inner shell accordingly.

The two shells are connected with wire anchors made of stainless steel or other anchor forms approved by the building authorities (e. g. Bever PU-flute). When anchoring, ensure that no moisture is transferred from the outer to the inner shell.

According to DIN 1996-2/NA »National Annex – Eurocode 6«, the clear shell distance for surface anchoring must not exceed 150 mm. If larger distances are required, special wall anchors approved by the building authorities must be used.

The minimum thickness of the non-load-bearing outer shell is 90 mm.
Bricked pillars require a minimum length of 240 mm.
All bricks must be supported at the interception level over their entire length.
If the support is interrupted, this must be done on both sides.

The wire anchors required for the connection in the area are compiled in DIN 1996-2. This contains information on the minimum number and diameter of the required fasteners per m² of wall surface depending on the distance between the masonry shells and the height of the wall areas above the site. According to DIN 1996-2, the vertical spacing of the wire anchors should not exceed 500 mm, the horizontal spacing should not exceed 750 mm. At the free edges (openings, building corners, expansion joints, upper ends on the outer shell) three additional anchors per metre of edge length must be installed.

Minimum number of wire anchors per m² wall surface [extract DIN 1996-2]:

Building height	Wind zone 1 bis 3 Wind zone 4 inland	Wind zone 4 Coast of North-/Baltic sea and islands of Baltic sea	Wind zone 4 islands of North sea
h ≤ 10 m	7[a]	7	8
10 m < h ≤ 18 m	7[b]	8	9
18 m < h ≤ 25 m	7	8[c]	

[a] in wind zone 1 and wind zone 2 inland: 5 anchor/m²
[b] in wind zone 1: 5 anchor/m²
[c] is a building floor plan length less than h/4: 9 anchor/m²

Other types of anchoring of the wire anchors are allowed, if it is proved by a test certificate that this type of anchoring can take up a tensile and compressive force of at least 1 kN with 1.0 mm slip per wire anchor. If one of these values is not achieved, the number of wire anchors must be increased accordingly.

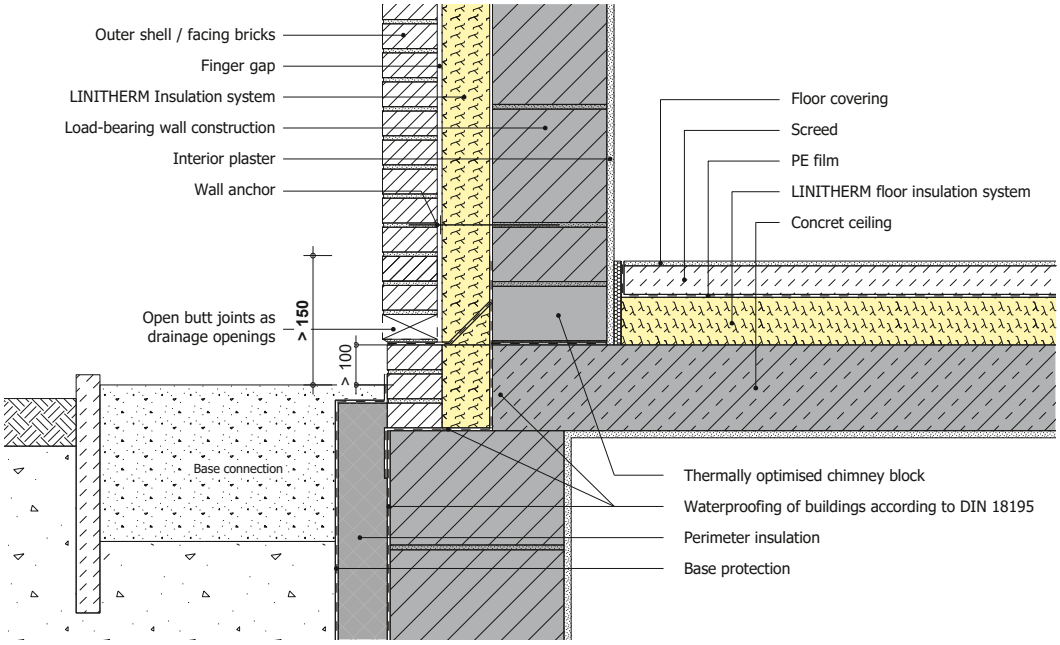
If the wire anchors are not laid in the horizontal joints due to different brick formats of the inner and outer shells, the shells must be connected to each other in some other way, e. g. by dowelling.

When installing LINITHERM PAL W, the insulation layer should be executed as full insulation (core insulation). An air layer for the rear ventilation of the non-load-bearing facing layer is no longer considered as necessary due to practical experiences. The panels must be tightly butted with a rebated or blunt edge and laid in a bond. When laying the panels, only a finger gap remains between the facing layer and the insulation, which is necessary for bricklaying.

AW–ZM–S / AW–ZM–O

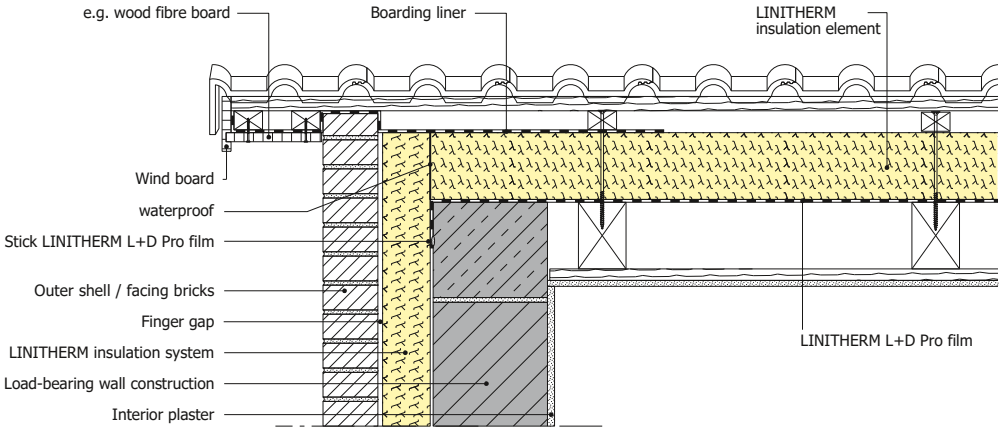
AW–ZM–S

Base connection



AW–ZM–O

Verge



Linzmeier Bauelemente GmbH
Industriestraße 21
D-88499 Riedlingen
+49 (0) 7371 1806-0
Info@Linzmeier.de
Schortentalstr. 24
D-07613 Königshofen/Thüringen
+49 (0) 36691 722-0
www.Linzmeier.de

BE / EN / VA PAL W
2020-12 / pdf
Subject to changes