

# Candiwall Technical Data Sheet

## Candiwall Installation Manual



Revision B - April 2020

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## Candiwall Technical Data Sheet

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The Candiwall System is suitable for use as non-structural weather-resistant, external wall façade panel system to provide a protective and decorative real clay brick finish for new or refurbished buildings on external vertical walls.

It can be attached to masonry, timber-frame or light gauge steel-frame construction with or without a cavity behind the system. No cavity is required for Masonry Substrate installations.

The system will improve the weather resistance of a wall and provide a decorative finish. However, it may only be installed where other routes for moisture penetration have been dealt with separately and where dampness, other than that caused by condensation, is not evident on the inner surface of the wall. The system can contribute to minimizing condensation on internal wall surfaces.

The wall and support frame to which the cladding is to be fixed should be structurally sound and constructed in accordance with the requirements of the relevant national Building Regulations and Standards.

Timber stud walls and timber battens must be structurally sound, designed and constructed in accordance with BS EN 1995-1-1 : 2004, and preservative treated in accordance with BS EN 351-1 : 2007

Galvanized steel framework must be structurally sound, designed and constructed in accordance with BS EN 1993-1-1 : 2005 and BS EN 1993-1-3 : 2006



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The system transfers its self-weight and design wind loads to the substrate wall. The substrate and any supporting framework should be capable of carrying the associated loads. It is the responsibility of the installer / end user to establish the performance of the substrate.

The system does not make any contribution to the overall structural performance of the building, and must not be used for the support of any temporary structure.

In severe exposure conditions, application of a breather membrane should be considered according to the building regulations. An enhanced fixing pattern may also be necessary. Please contact Candiwall Technical Desk for guidance.

The structural adequacy of the fixings used to attach the panel to the substrate wall, including their pull-out strength, will depend on the type and condition of the individual substrate wall, and must therefore be designed and selected on a project specific basis.

The maximum spacing between fixings should not exceed 400 mm horizontally and 300 mm vertically. We supply 10 fixings/m<sup>2</sup> for normal conditions. For construction projects in severe exposure conditions (wind loads) more fixings should be applied accordingly. Please contact Candiwall Technical Desk for guidance.

For cavity installations on timber-frame and steel-frame builds, any non-ventilated cavity should be at least 15 mm wide. The Candiwall starter track is supplied with holes on the base angle to allow the drainage of any condensation that may occur.

To ensure good adhesion, any Brick Slips used should perform as follows:-

Water absorption - **must be at least between 6% and 10%**

Frost resistance - **0 defects in 100 cycles - this test is only necessary when brick slips have more than 10% water absorption**

Linear thermal expansion (20°C to 100°C) - **not more than 0.3mm/m**

Expansion using boiling water - **value must be less than -  $7.5 \times 10^{-6}$**

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Prior to the commencement of any Candiwall Installation, it is important to ensure that the substrate is prepared correctly. Failure to prepare properly could compromise the effectiveness and integrity of the Candiwall system.

- All substrate surfaces must be clean and be free of all dust and loose material. All traces of oils, foreign matter, dust and dirt must be removed prior to the application of the Candiwall XPS Insulation Board
- Any guides, L brackets, shelf angles or starter rails used at the bottom of the installation **MUST BE LEVEL**. This is essential as it will affect the whole of the setting out of the façade. Failure to ensure this element is correctly completed could lead to poor coursing of the Brick Slips when they are installed.
- Application of the adhesive must be carried out at a temperature between 5°C and 30°C
- It is advisable not to apply the Candiwall Adhesive or the Candiwall XPS Insulation Board in periods of rain.
- If fixing to old masonry substrates, ensure that all loose material, old render, paint and any loose mortar is removed and made good prior to the installation of the Candiwall XPS Insulation Board. The substrate should be as true and level as possible.
- If fixing to old ceramic tiles, any old tiles that are loose and broken must be removed and the wall made good. If fixing to tiles ensure that the placement of any guides, L brackets, shelf angles or starter rails used at the bottom of the installation take account of this, especially if the whole of the wall isn't tiled. Remember, it is not advisable to use the Candiwall Adhesive as a gap filler.



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#### **How do I calculate how much Candiwall XPS Board I need?**

The Candiwall System is sold by the square metre. Simply calculate the area to be covered, taking care to remove all door and window openings from your calculation. It is advisable to add 10% to your calculated or measured figure, just to take account of any site damage that may occur or site cutting that may be needed. For example, if your measured area equates to 45.89m<sup>2</sup> it may be best to order 50m<sup>2</sup> as it is sometimes expensive to send individual small quantities to site and may also delay the installation.

#### **How do I calculate how many Candiwall Brick Slips I need?**

Again, the calculation is straight forward as the slips are also sold by the square metre. Generally, 65mm high stretcher slips are calculated at 60 slips per sq mtr. Order the same square meterage of slips as you do for Candiwall XPS Insulation Board.

The only thing to ensure here is that you add the number of corner slips required. These are sold by the lineal metre and are calculated vertically at 14 slips per lin mtr. Don't forget to consider where the doors and windows sit within the structural opening reveals as this could affect the number of corner slips required. If you require Soffit Stretcher Corner slips, these are available and are calculated at 5 slips per lin mtr. ALL CORNER SLIPS SHOULD BE CONSIDERED EXTRA TO THE STANDARD SLIP MEASURE. For example, if you measured area equates to 45.89m<sup>2</sup> order 50m<sup>2</sup> of Candiwall XPS Insulation Board; 50m<sup>2</sup> of Candiwall Brick Slips + the lineal metre of corners that you need. If in doubt, call the Candiwall Helpline on 01825 723404 to get assistance, or send a drawing to [sales@candiwall.net](mailto:sales@candiwall.net) and we will help you all we can.



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### Preparation of the substrate

Candiwall is designed to be applied to sound vertical flat surfaces which include:

- Masonry including Concrete, Brick; Stone; Render (which must be sound and crack free)
- Painted substrates with organic coatings
- Timber Frame with minimum 15mm sheathing board (OSB, Plywood, Cement Particle Board (CPB), etc.)
- Light Weight Metal Frame (Met Sec) with minimum 15mm sheathing board (OSB, Plywood, Cement Particle Board (CPB), etc.)
- SIPS – please phone the Helpline to discuss on 01825 723404

### General Application Conditions

The bonding works should not be carried out in the following conditions:

- Rainy Periods
- Snowy Periods
- Temperatures below 5°C or above 30°C

### Starter Rails, L shaped brackets Shelf Angles and Candiwall Guide Rails

It is considered good practice in certain circumstances to use a starter rail of some description. Dedicated Candiwall Starter Rails are available and can be added extra to your order if required. The size of the projecting angle for any starter rail or shelf angle depends on the thickness of both the board you are using and the slips you are using. For example, if you are using 25mm board and 15mm thick slips, the projection of the rail should be 40mm. When applying the bottom board to the substrate using a starter rail, remove the lap joint projection to fit the board on to the rail. ALL STARTER RAILS SHOULD BE CHECKED TO BE DEAD LEVEL AND SECURE BEFORE CONTINUING WITH THE CANDIWALL APPLICATION.

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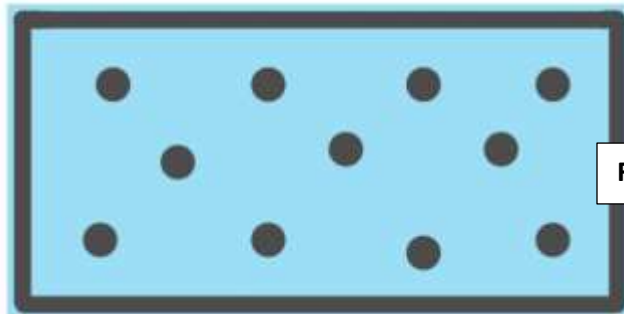
#### Candiwall Adhesive Application

For preparation of the adhesive, please refer to the Candiwall Adhesive Technical Sheet.

- The adhesive should always be applied to the board and not the substrate
- If fixing The Candiwall XPS Board to Masonry, ensure that the board is fully covered using a plasters comb or tile adhesive comb. **(See Fig 1 below)**
- You may choose to use a ribbon of adhesive with dabs of adhesive in between as shown **(see Fig 2 below)** If you choose this method ensure that the outer ribbon is at least 3cm away from all the edges and at least 60% of the board is covered with adhesive.



- **NEVER use the adhesive in the lap joints as this could lead to thermal bridging.**
- **NEVER allow the adhesive to skin over before you fix the board to the substrate. This could lead to adhesive failure.**



- **NEVER use the Candiwall adhesive to stabilise the substrate.**
- **NEVER use the Candiwall adhesive to fill gaps.**
- **NEVER exceed 10mm thickness of Candiwall Adhesive bead.**

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### Fixing the Candiwall XPS Insulation Board

The Candiwall XPS Insulation Boards should be placed end to end in horizontal rows starting from the starter rail at the bottom of the wall. Joints should be staggered as in half bond brickwork. Please pay particular attention to bonding at the corners as shown in the illustration. Please see diagram below (see Fig 3 & 3a)

Fig 3

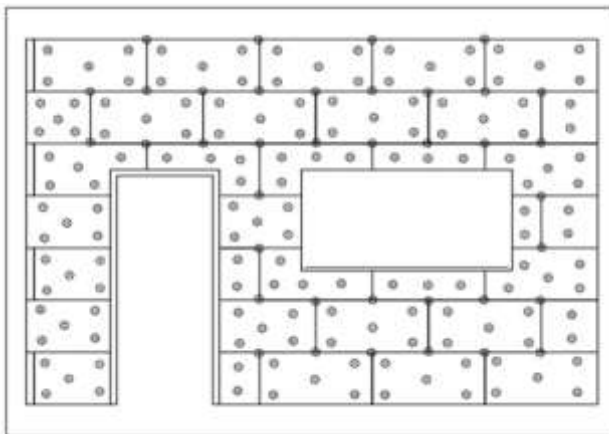


Fig 3a



Candiwall XPS Insulation Boards feature lap joints on all edges to ensure thermal performance is maintained. The joints do not need taping or gluing and no mastic is required.





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### Window & Door Frames and other projections

If the Candiwall XPS Insulation board meets with projecting window frames, door frames, cills or other features a 5mm clearance should be allowed. The gap should then be filled with a suitable flexible mastic.

### Expansion Joints

Expansion joints are only required in the Candiwall System if the structure itself demands it. If the substrate (frame of the building) requires expansion joints these should be maintained in the Candiwall installation. If an expansion joint is required, allow a 10mm gap in both the Candiwall XPS boards and the brick slips. Use a suitable mastic to make the joint to ensure that the correct structural expansion and contraction can be maintained.

### The use of Candiwall Mechanical Fixings

The Candiwall system has two types of mechanical fixing, one for Masonry (see Fig 4 below) and one for timber substrates. (see fig 5 below)



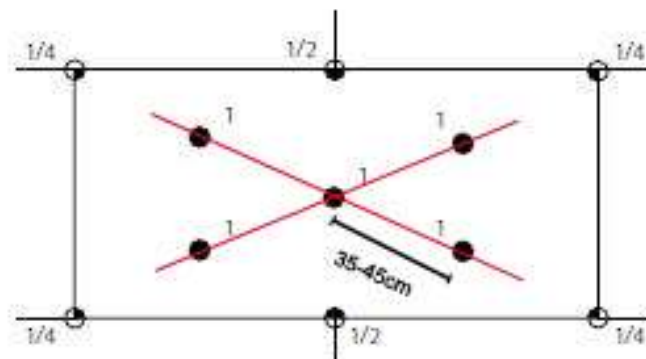
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### The use of Candiwall Mechanical Fixings (Continued)

For fixing to timber substrates, no adhesive is used between the back of the Candiwall XPS Insulation Board and the substrate. In all cases we supply 10 mechanical fixings per m<sup>2</sup> whether it be fixing to timber or masonry. At least 10 mechanical fixings must be used per m<sup>2</sup> of Candiwall Installation. This is 7 fixings per board. See diagram below. Any sheathing board used for timber frame, light weight metal frame or other non-masonry applications, must be at least 15mm thick.

THE ATTACHMENT OF MECHANICAL FIXINGS IN MASONRY SUBSTRATES MUST BE MADE AT LEAST TWO DAYS AFTER BONDING THE BOARD TO THE MASONRY. This allows time for the adhesive to cure.



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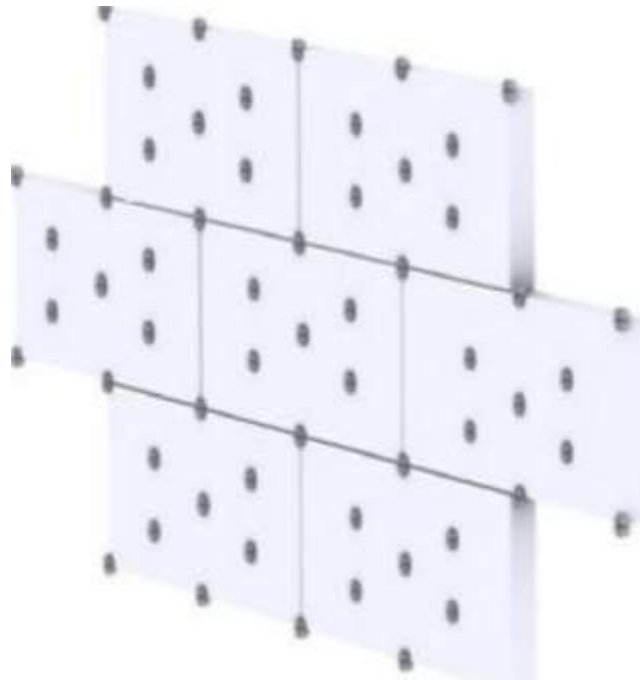
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#### *The use of Candiwall Mechanical Fixings (Continued)*

The correct use of Candiwall Mechanical Fixings is crucial to the overall integrity of the installation of the entire system. Ensure that all mechanical fixings are properly and firmly secured before you move on to attach the Brick Slips to the Candiwall XPS Insulation Board.

When attaching Candiwall Mechanical fixings to masonry, it may be necessary to drill through the centre of the countersunk area in the Candiwall XPS Insulation Board in to the substrate. If you are fixing to Concrete then drill a suitable hole using a good quality masonry bit and percussive action on the drill. If drilling in to stone, brick, Porotherm (or similar) ensure that the percussive action on the drill is turned off. The depth of the hole should always be greater than the length of the fixing.

This is the pattern of the fixings – 7 fixings per 1250mm x 600mm board.



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#### **Fixing Brick Slips to Candiwall XPS Insulation Board**

For fixing the Brick Slips to the Candiwall XPS Insulation Board, use the Candiwall Adhesive supplied with your order. This is the same adhesive as is used for attaching the Candiwall XPS Insulation Board to any masonry substrate. Consult the Candiwall Adhesive Technical Data Sheet for more information.

**Step 1** Apply the Candiwall Adhesive to the Candiwall XPS Insulation Board



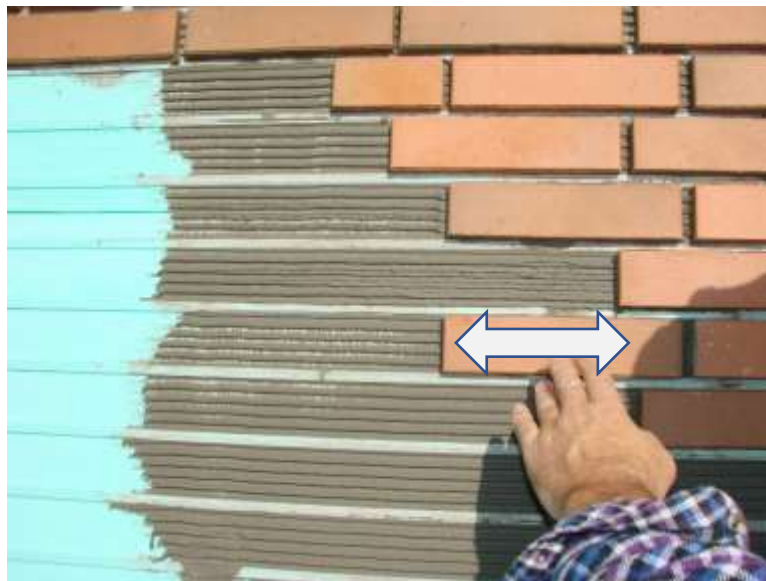
**Step 2** Using a 5 to 6mm comb, create a uniform adhesive layer ready to accept the Brick Slips



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**Step 3** Place the Brick Slips on the adhesive as soon as possible to avoid “skinning” of the adhesive. Please see the Adhesive Technical Data Sheet. When placing the Brick Slips, press and use a horizontal agitation motion to ensure good compression and coverage of the adhesive to the board and slip.



#### **NOTES**

- If using corner slips fix them in place first and then work away from the corners
- Expansion joints are only required in the Candiwall System if the structure itself demands it. If the substrate (frame of the building) requires expansion joints these should be maintained in the Candiwall installation. If an expansion joint is required, allow a 10mm gap in both the Candiwall XPS boards and the brick slips. Use a suitable mastic to make the joint to ensure that the correct structural expansion and contraction can be maintained.
- You should apply Brick Slips from the top of the structure and work down the build. This ensures that any adhesive snots do not fall on any finished surfaces.

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#### Pointing of Joints in Brick Slips

There are various methods for this element of the build. It is possible to use any favoured method that is relevant to the pointing of traditional brickwork.

You may like to consider gun applied pointing mortar, bag applied pointing mortar or trowel applied traditional methods to create the finish you require. Please be aware that the depth of the pointing joint will be less than you would expect when using traditional full-sized bricks, so it may not be possible to achieve some of the more elaborate pointing styles. Please contact us on the technical helpline if you would like to talk this through.

General usage guide for 25kg bag of mortar

Manufactured Slips = 3.5m<sup>2</sup> Cut Slips = 1.75m<sup>2</sup>





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### Elements of the Candiwall System

For each m2 ordered we supply the following materials:-

#### MASONRY SUBSTRATES:-

- 1.3 Candiwall Backer Boards 1250mm x 600mm
- 12 Kgs of Candiwall Adhesive (supplied in 25kg bags)
- 10 No. Mechanical Fixings (Spike Fixings)
- 10 No. Integrated insulation sleeves for use with spike fixings
- 1 No. Routing Tool (per order)

#### TIMBER; FSF (Lightweight Steel Frame with Sheathing Board) and

#### OTHER SUBSTRATES THAT REQUIRE SCREW FIXING:-

- 1.3 Candiwall Backer Boards 1250mm x 600mm
- 6 Kgs of Candiwall Adhesive (supplied in 25kg bags)
- 10 No. Mechanical Fixings (Screw Fixings 8 gauge BZP Countersunk for structural timber applications)
- 10 No. Integrated insulation sleeves for use with screw fixings
- 1 No Routing Tool (per order)

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DKM Brick Cladding Ltd., Units 18 -22 Bluebell Business Estate, Lewes Road, Uckfield, TN22 3HQ



For help please ring the Candiwall Help Line

01825 723404

Or

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