

DIM Design & Installation Manual

Swisspearl Plank Connect on Wood





Table of Contents

Swisspearl	4
The Self-ventilating Facade	6
Swisspearl Plank Connect	8
Product Range	11
Accessories	11
Cutting and Sealing	12
Substructure	13
Swisspearl Plank Connect Profiles	14
Installation – Horizontal	16
Installation – Vertical	26
Painting	35
Storing and Handling	36
Health and Safety	37
Care and Maintenance	38

Swisspearl

Swisspearl

Swisspearl is one of the leading European manufacturers of multi-capability fibre cement building products. Our products and solutions add exciting new design opportunities for moulding attractive, durable settings for people's lives. But Swisspearl is more than mere products. We also help make all kinds of design and construction projects easier as well as more profitable, inspiring and effective. And for us, all construction also involves building relations with people, making your day better, and helping you make the day better for others.

Product Information

Swisspearl fibre cement is a modern building material made from natural and environmentally friendly raw materials. The technology has been developed by Swisspearl, having more than 90 years of experience within the manufacture of fibre cement. Our wide experience ensures a sustainable product which has accumulated all the advantages of fibre cement. The facade range can be used in all self-ventilated light weight facade constructions.

Featuring properties such as non-combustibility, sound and weather insulation as well as high impact strength, Swisspearl fibre cement boards are the ideal facade material.

Quality

Swisspearl Plank Connect product specifications and classifications comply with EN 12467:2012+A2:2018 Fibre-cement flat sheets and 13501-1:2007+A1:2009 Fire classification of construction products and building elements.

Swisspearl Plank Connect range

- is manufactured in accordance with the quality management system ISO 9001:2015
- complies with the provisions set out in the Construction Products Regulation (EU) No. 305/2011

Colour resistance on painted surfaces

The colour and gloss of Swisspearl Plank Connect is little affected by the weather, and the boards will retain the colour and glossiness for a long time.

Warranty

Warranty conditions are available on request from your local Swisspearl office.

Disclaimer

The information contained in this publication and otherwise supplied to users of Swisspearl products is based on Swisspearl's general experience, best knowledge and belief. However, due to factors which fall beyond Swisspearl's knowledge and control, which can affect the use of the products, no warranty is given, express or implied with respect to fitness for particular purpose or otherwise. Swisspearl's policy is one of continuous improvement. Swisspearl therefore reserves the right to alter specifications at any time and without notice. Colours and textures may vary according to light and weather conditions. Owing to this and limitations of the printing process, colours in this brochure may vary.

Please, ensure that you have the latest version of this publication by checking that the publication date corresponds with the downloadable version from our website. In case of doubt, please contact your local Swisspearl representative.



The self-ventilating facade

A self-ventilating facade is a construction which helps minimize temperature variations in the wall throughout the year. Sunlight and heat are reflected away in the summertime, and insulation behind the facade boards reduces heat loss in lower temperatures.

At the same time, the natural ventilation passing through the construction minimizes condensation. The self-ventilating facade has additional features and benefits.

The most important benefit is the protection of the underlying construction against weather, wind and moisture. Some moisture passes through the facade, but it is limited to a level that can either be drained away or eliminated by natural ventilation.

The drainage feature of the system works when rainwater or moisture penetrates through the gaps in the facade. The moisture runs down either the reverse of the facade boards, the windstopper, or the insulation. There should be ventilation openings at the base of the structure and above doors and windows. These openings will also help drain the water away from the construction.

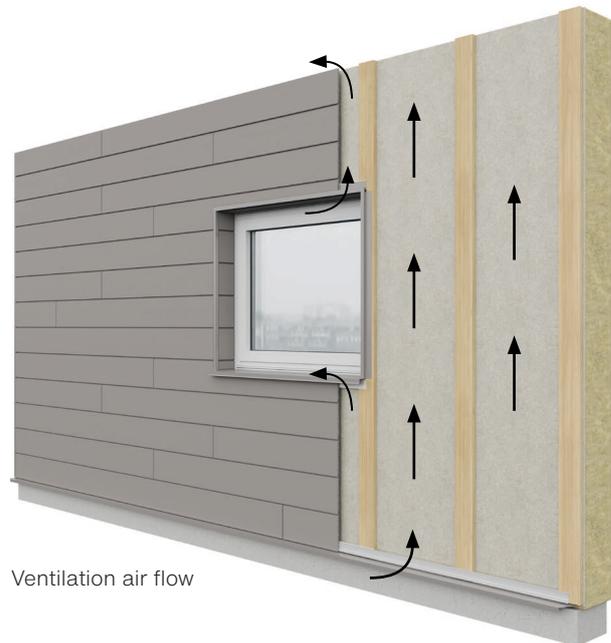
The natural ventilation works by means of a chimney effect. The air enters at the bottom of the structure and on its way up through the facade takes moisture through the ventilation openings at the top of the structure or at window or door openings.

Swisspearl recommends increasing the ventilation area behind the Plank boards when installing Plank boards on taller buildings. In the table below, it is showing the recommended minimum ventilation cavities behind the Plank.

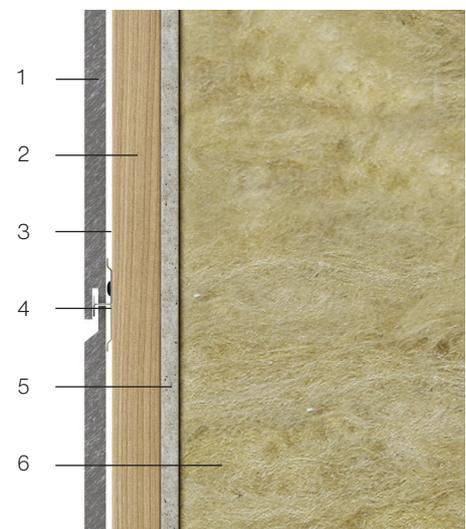
Cladding height	min. gravity
<6 m	20 mm
6-30 m	30 mm
>30 m	40 mm

Wood structure

1. Swisspearl Plank Connect
2. Wooden batten
3. Ventilated area
4. Swisspearl Plank Connect Clip
5. Swisspearl Windstopper
6. Wall structure

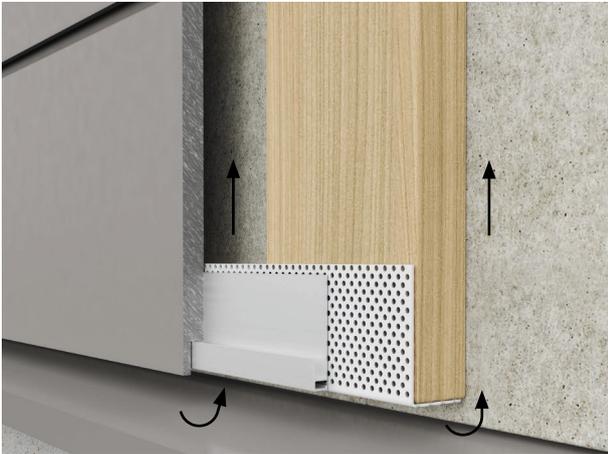


Ventilation air flow

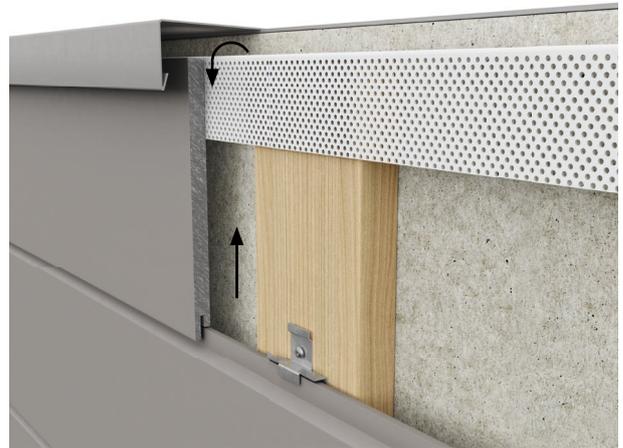


The self-ventilating facade

Ventilated Openings



Air is pulled into the construction through an opening at the base of the facade, and it must be ensured that unobstructed ventilation is possible throughout the facade's height. There should be a ventilation gap of minimum 15mm, or equivalent 150cm² per meter. If perforated profiles are used, a ventilation area opening of minimum 150cm² per meter is required. The opening at the base is also used to drain moisture that has entered the facade.



The passage of air must be maintained at the top of the facade whether it abuts to a roof or other structure. Just as at the base, there must be a ventilation gap of minimum 15mm or 150cm² per meter.



A horizontal ventilation opening of minimum 15mm or equivalent to 150cm² per meter should be maintained beneath windows or other openings where a sill is used. This ventilation gap is usually formed between the top edge of the facade boards and the bottom edge of the sill. It is recommended that the sill projects a minimum of 30mm beyond the front of the facade. This ensures that the water running from the sill does not enter the structure.

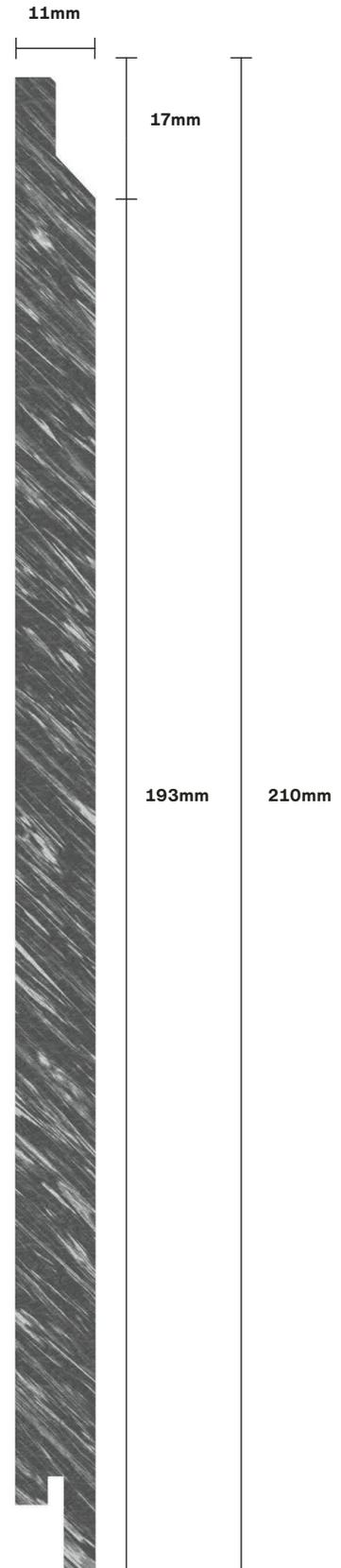


A horizontal free ventilation opening must be maintained above windows and doors as well. This ventilation gap must be at least 15mm wide. If steel, aluminium or plastic perforated profiles are used, a ventilation area opening of minimum 150cm² per meter is required. The opening at the base is also used to drain moisture that has entered the facade.

Swisspearl Plank Connect

Swisspearl Plank is now available in both a lap and a tongue and groove version. To distinguish the two Swisspearl has named the lap-version Swisspearl Plank Original. In this installation manual we will only focus on the tongue and groove version which is called Swisspearl Plank Connect.

Swisspearl Plank Connect is a system including Swisspearl Plank Connect Clips that allow for easy hidden fixing of the planks.



Swisspearl Plank Connect

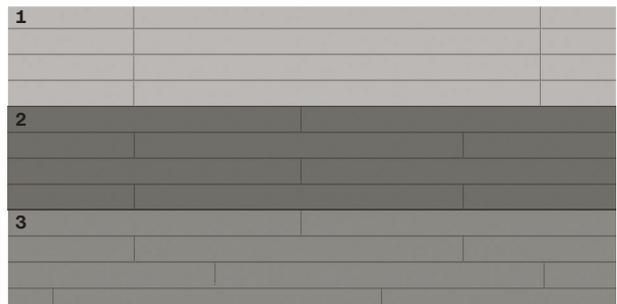
Horizontal installation

Swisspearl Plank Connect is mounted horizontally on vertical wooden battens. The planks do not overlap but fit together through a tongue and groove connection and a clip attached to the wooden substrate. More information about the installation can be found on the next pages.



Different installations Patterns

It is possible to install Swisspearl Plank Connect with a stack bond (1) which gives a very straight and modern look. In addition, the stretcher bond (2) is a very popular option. Next to that it is also possible to shift joints (3). Independent of the pattern the plank ends may be placed against each other.



Vertical installation

Swisspearl Plank Connect can also be mounted vertically on horizontal wooden battens. Ventilation is foreseen behind the horizontal battens. More information about the installation can be found further in this manual.



Wide range of accessories

Swisspearl offers all profiles and fixing materials to complete your facade. More info can be found on the following pages.



Product



Swisspearl Plank Connect - Textured surface - Properties

Length: 3000mm

Full width: 210mm

Visible width: 200mm

Thickness: 11,2mm

Weight pcs: 10kg

Surface: Textured

Coverage per square metre 1,67 pcs

Fixings per square metre 10 pcs/m²

Accessories



Swisspearl Plank Connect Clip

Size: 47x48mm

A2 stainless steel



Swisspearl Plank Connect Screw

SCR-W 4.2x30mm

A2 stainless steel



Swisspearl Plank Connect Screw 40mm

SCR-W 4.2x40mm

A2 stainless steel



Swisspearl Plank Acrylic Paint 0.5L

100% Acrylic Latex paint available in all colours



Swisspearl Plank Circular Blade

Fibre cement blade for circular saw
Ø160x2.2x20mm



Swisspearl Facade Screw wood

SCR-W 4.5x41mm
A2 stainless steel

Cutting and Sealing

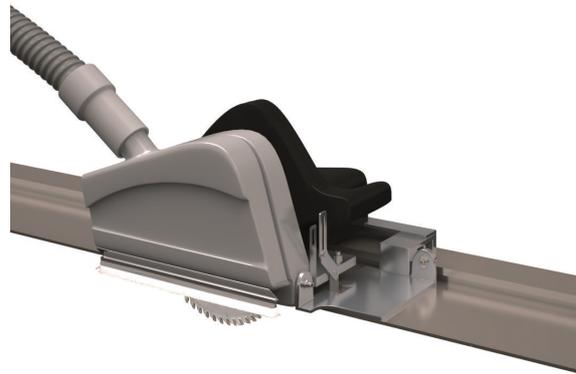
When fibre cement is cut, dust is created. This dust may contain crystalline silica which can pose a health risk. To ensure adequate ventilation, always work outdoors and use cutting tools that minimize dust. Or use a HEPA filter vacuum attachment for power saws equipped with a Swisspearl Circular Saw Blade to reduce exposure. Never use water when cutting.

If ventilation is not adequate to limit exposure, wear a disposable respirator or air purifying cartridge respirator fitted with a Class P2 filter (European EN 143 standard). Cut the product by using a polycrystalline diamond-tipped blade. To reduce exposure to dust we recommend using Swisspearl Circular Saw Blade.

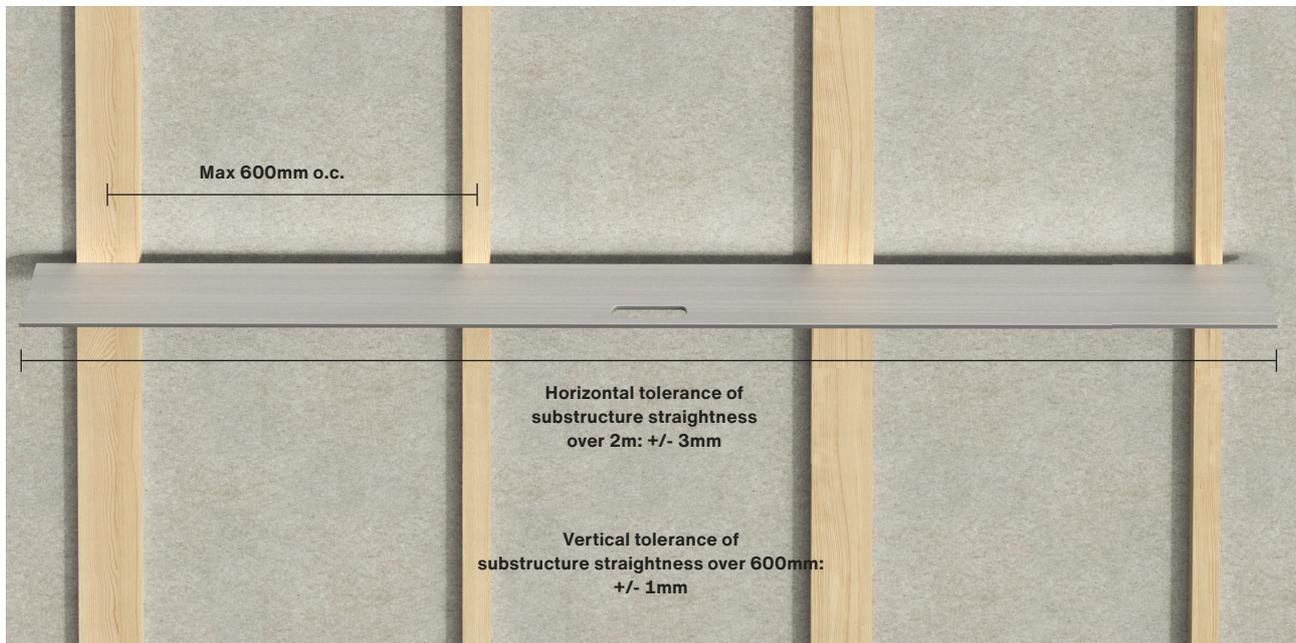
When making cut-outs use a Jigsaw with a carbide blade for fibre cement. As an alternative for small tasks, use a rough woodcutting blade.

In order to protect the edges from chipping, the direction of travel of the blade must be taken into account before deciding on whether to cut the boards on the front or reverse. Take care to remove dust from the surface after installation as leftover cement particles can leave permanent marks.

All on-site cuts with regards to Swisspearl Plank Connect must be resealed with 100% acrylic latex paint before installing. Only Swisspearl Plank Acrylic Paint must be used for resealing.



Substructure



Straightness of substructure

Fastening substructure

Anchorage of the substructure on the load-bearing wall must follow all local standards and regulations. Before installing the substructure on the load-bearing wall, it should be checked by the installer to ensure that it is straight and the substructure can be mounted safely.

Make sure to choose the correct anchorage system for the substructure suitable for the material. Always install the anchoring according to the manufacturer of the system/ screw/bolt used.

Use the correct corrosion resistance according to the environment of the building's location.

Wind load calculations on how the substructure should be fixed to the load-bearing wall should be considered. This calculation will normally be done by a project/construction engineer.

Wood quality for substructure

Make sure that the quality of the wood used for the substructure follows country specific standards and regulations.

Horizontal Installed Plank Connect

Treated or untreated wood can be used for the substructure. If untreated wood are used then it is recommend to use a flat EPDM.

Thickness: min. 20mm

Width at joints: min. 75mm

Width at middle batten: min. 45mm

Vertical Installed Plank Connect

Treated or untreated wood can be used for the vertical substructure. Treated wood should be used for the horizontal substructure.

Thickness: depending on distances between vertical battens. 38mm battens is recommend at a distances of OC 600mm. Width first batten and battens over openings: min. 75mm Width other horizontal battens: min. 45mm

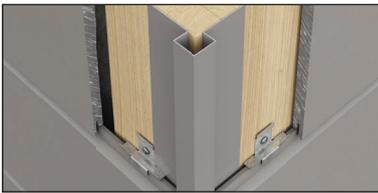
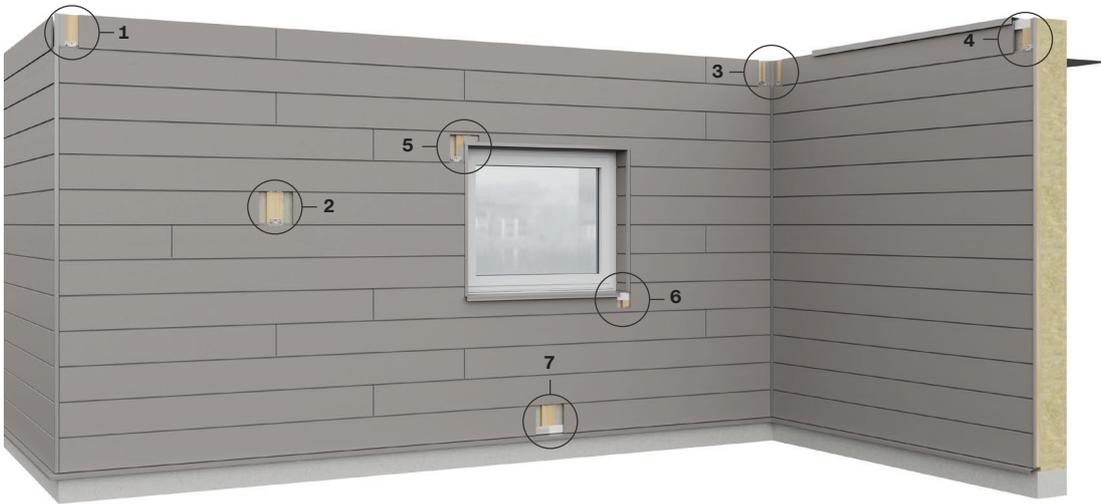
Straightness of substructure

The horizontal tolerance of straightness for the substructure is +/- 3.0mm measured with 2 meter straight edge.

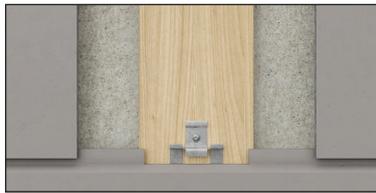
The vertical tolerance of straightness for the substructure is +/- 1mm over 600mm measured with straight edge.

Swisspearl Plank Connect Profiles

Horizontal Installation



Picture 1
Swisspearl External Corner Profile Small



Picture 2
Swisspearl Plank Connect Clips



Picture 3
Swisspearl Internal Corner Profile



Picture 4
A. Swisspearl Plank Connect End Profile
B. Swisspearl Ventilated Profile



Picture 5
A. Swisspearl Plank Connect Window Profile
B. Swisspearl External Corner Profile Small



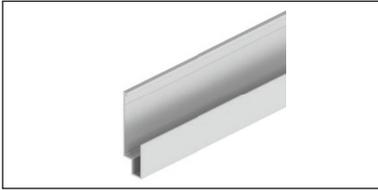
Picture 8
Swisspearl Ventilated Profile



Picture 7
A. Swisspearl Plank Connect Start Profile
B. Swisspearl Ventilated Profile

Swisspearl Plank Connect Profiles

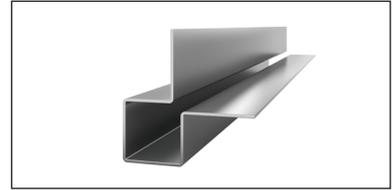
Horizontal Installation



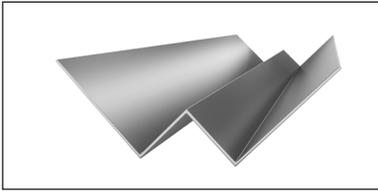
Swisspearl Plank Connect Window
Profile Extruded Aluminium
Thickness 1.1mm
Length 3000mm



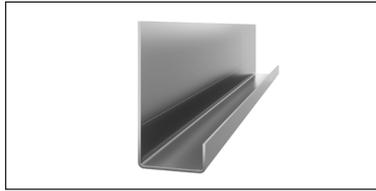
Swisspearl Plank Connect Start Profile
Extruded Aluminium
Thickness 1.1mm
Length 3000mm



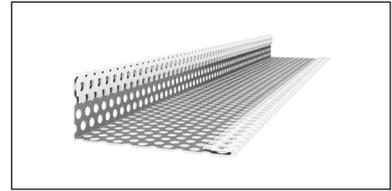
Swisspearl External Corner Profile
Small Painted Aluminium
Thickness 1.0mm
Length 3000mm



Swisspearl Internal Corner Profile
Painted Aluminium
Thickness 1.0mm
Length 3000mm



Swisspearl Plank Connect End Profile
Painted Aluminium
Thickness 1.0mm
Length 3000mm



Swisspearl Ventilated Profile
Perforated steel
Thickness 0.6mm
Length 3000mm

Installation

Horizontal



Installing Swisspearl Plank Connect on timber frame

Max. support distance: 600mm o.c.

Max. distance between 2 Swisspearl Plank Connect Clips: 600mm o.c.

The distance to terrain from the bottom edge of the facade board should be a minimum of 150mm (1). The distance to flat roofs, balconies and other horizontal structures where the water can drain away can be a minimum of 50mm.

The following screws can be used:



Swisspearl Plank Connect Screw

for fixing the Swisspearl Plank Connect Clips on wood,
SCR-W 4.2x30mm / 4.2x40mm



Swisspearl Facade Screw

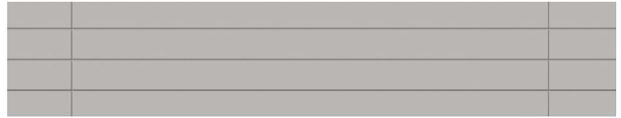
for visible fixing of Swisspearl Plank Connect on wood,
SCR-W 4.5x41mm.

Installation

Horizontal

Width of support battens in relation to pattern

All joints should be supported with a Swisspearl Plank Connect Clip on a wooden batten of min. 75mm (1).
Between the ends of the planks all Swisspearl Plank Connect Clips can be fixed on min. 45mm wide battens (2).



As some designs have irregular joints it is recommended to always use a batten of min. 75mm (1) to make sure all joints are supported.



Requirements for Increased Impact Resistance

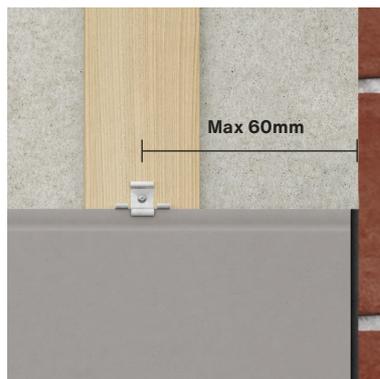
If Swisspearl Plank Connect is to be used in areas where increased impact resistance is required, two clips must be installed per joint.

Battens at the joints must have a minimum width of 95 mm to ensure that screws are not placed too close to the edge of the wood.

Clips must be installed at a distance of 5 mm from the end edge of the Plank Connect.



The edge distance measured from the center of the clip to the end of the plank must not exceed 60mm.

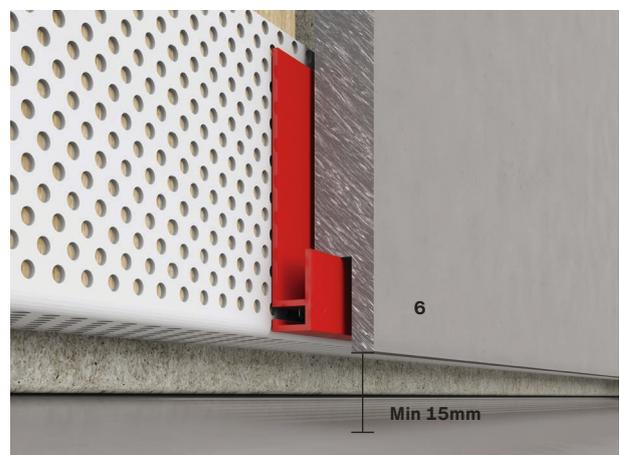
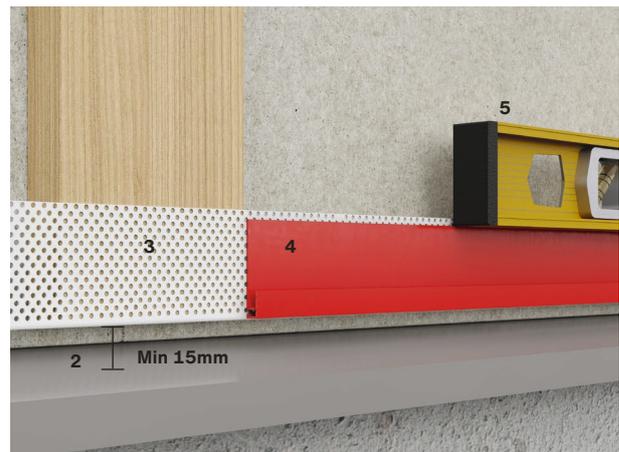


Installation

Horizontal

Step 1: Support battens and Start Profile

1. Install battens with maximum 600mm on center. Make sure that the battens are levelled out. Chose a mounting solution for the battens which is suitable for fixing the battens to the wall.
2. Leave 15mm space between the structure below and the battens. This is both for ventilation and to prevent the wooden battens from standing in water.
3. Install Swisspearl Ventilated Profile, to close the structure behind Swisspearl Plank Connect and to prevent small animals like mice from entering behind the planks.
4. Install Swisspearl Plank Connect Start Profile. Pre-drill with a $\varnothing 4\text{mm}$ drill before fixing the profile with the Swisspearl Plank Connect Screw.
5. Make sure the Swisspearl Plank Connect Start Profile is levelled before fastening. This is important as it will affect the rest of the installation if not done correctly.
6. Use a Swisspearl Plank Connect to determine the correct fixing height for the Swisspearl Plank Connect Start Profile. The minimum distance between the bottom side of the plank and the structure below is 15mm.



Installation

Horizontal

Step 2: External and Internal Corner Profiles

Before Swisspearl Plank Connect can be installed the subconstruction needs to be in place.

Install the profiles with flathead nails through Ø4mm pre-drilled holes.

Make sure the profiles are levelled.

Align all profiles correctly by making sure that there is an equal distance between profiles at the top and the bottom of the facade.

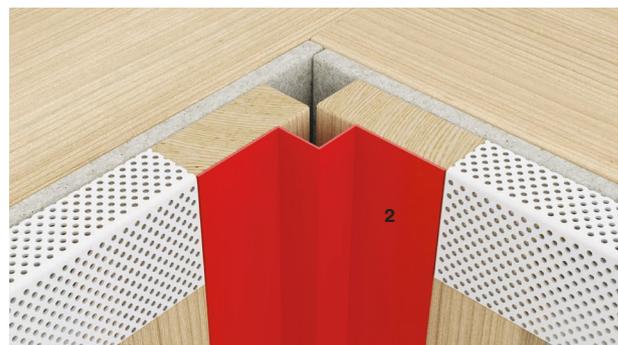
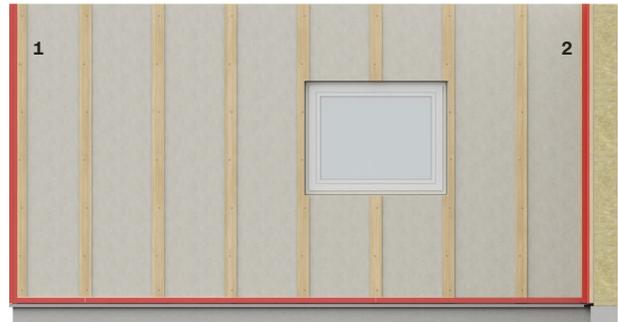
1. Swisspearl External Corner Profile

Create a fixed corner with two 100mm battens. This enables both the fixing of the profile and of the clips.

2. Swisspearl Internal Corner Profile

The profile is installed on two battens with a width of 100mm. When installing the battens they should not be pushed all the way in the corner. This is to make sure that the screw for the clip does not get too close to the edge.

3. When installing Swisspearl Connect Planks next to other building materials, it is an aesthetical advantage to use the Swisspearl Plank Connect End Profile.



Installation

Horizontal

Step 3: Openings like windows and doors

When installing the subconstruction for Swisspearl Plank Connect at windows and other openings it is important that it is made correct so air can move freely vertically.

For that reason, no horizontal battens or similar should be installed over or under windows and other types of openings.



Only install vertical battens with a maximum of 600mm on center.

It can be an advantage to use wider battens next to windows and openings as otherwise the Swisspearl Plank Connect Clips might be mounted too close to the edge of the batten.



Install the Swisspearl Ventilated profiles on top and below the openings.

It can be an advantage to install extra supporting battens above the window so that it is easier to install the profiles (1).

Also, below the window it can be an advantage as the extra battens will give extra support (2).



Installation

Horizontal

Step 4: Openings, side profiles and sill

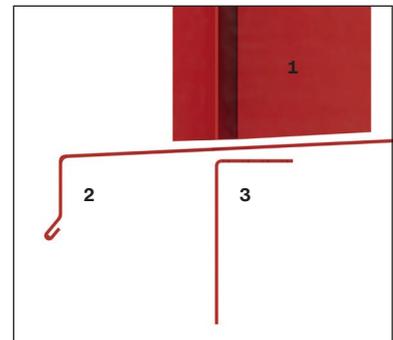
Windowsill

When installing profiles around windows, start by installing the windowsill. The windowsill should slope slightly away from the window. The windowsill must protrude at least 30mm beyond the front of the facade.

Use the profiles on the sides of the window to determine the correct length of the windowsill. In our example the Swisspearl External Corner Profile Small is used. The window sill should be made 12mm wider than the window opening. It is needed to make cut-outs on both ends of the windowsill to make it fit between the window reveals. This recess can vary and it can be an advantage to bend it upwards so that water cannot penetrate the construction. Make sure to use a sealant to close the gap entirely. Cut the Swisspearl Exterior Corner Profile in the same angle as the windowsill so that it almost touches the window profile and water flows away from the facade.



Windowsill



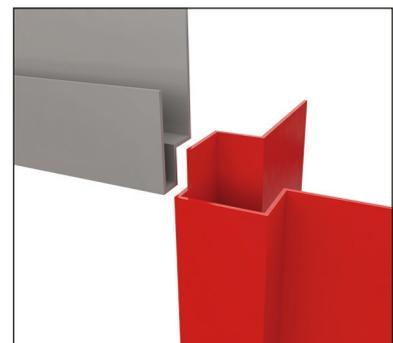
1. Swisspearl Exterior Corner Profile Small
2. Windowsill
3. Swisspearl Ventilated Profile

Top of the window

In the top of the window a special cut out is needed. Cut the Swisspearl External Corner Profile in order to allow the Swisspearl Plank Connect Window Profile to pass. The window profile should stop at the end of the corner profile.



Top of the window



Installation

Horizontal

Step 5: Installation of Swisspearl Plank Connect

Start installing the planks onto the Swisspearl Plank Connect Start Profile. Level the planks.

Make sure to check every 5th row whether the planks are still levelled.

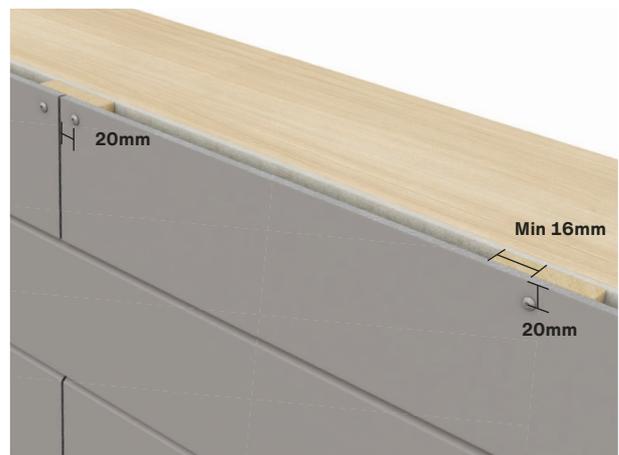
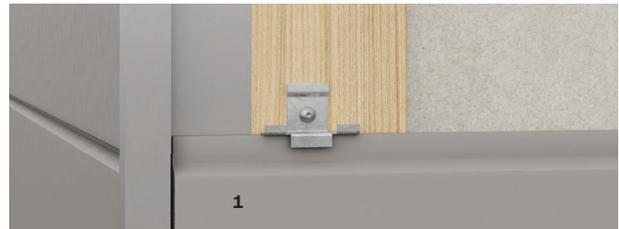
Whenever possible it should be avoided to install the Swisspearl Plank Connect Clips on top of a profile as this would add extra thickness. Leave a 5mm joint (1) between plank and profiles.

Swisspearl Plank Connect can be installed with butt joints or with an open joint (2) of max. 5 mm. When using open joints, it is recommended to apply EPDM on the battens to protect them against water.

For façades wider than 20 meters, depending on the size and placement of openings, a joint of 2–3 mm between all plank ends should be used, or the planks can be installed butt-jointed in combination with a movement joint of 5 mm applied every 20 meters.

If Swisspearl Plank Connect is required to withstand impact from ball play or other types of mechanical impact, two clips (3) must be used at each joint to ensure sufficient strength. The clips must be installed with a minimum distance of 5 mm from the end edge of the Plank Connect.

Planks below roof trims or windowsills can be fixed with Swisspearl Plank Connect Clips above the plank. In most cases these planks have to be cut to size and then they must be fixed with visible Swisspearl Facade Screws. It is required to pre-drill the plank with a Ø5mm drill. Fixing should not be closer than 20mm from plank edges and should never be less than 16mm from timber batten edges.



Installation

Horizontal

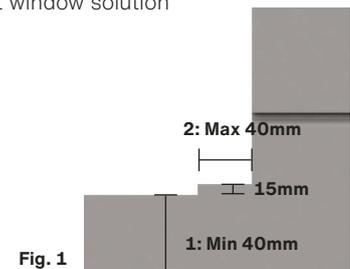
Step 6: Installation of Swisspearl Plank Connect around window openings

Cut out the planks according to the size of the window.

Swisspearl recommends to foresee joints at both ends of the window in case the remaining height of the Swisspearl Plank Connect drops below 40mm (1). In this way the risk of cracks or breaking is avoided. To make the air gap under the windows less visible it is possible to make the 40mm (2) at the ends of the windowsill 15mm higher. This way you will still have the ventilation area but it will be less visible.



Swisspearl Plank Connect window solution



A horizontal ventilation opening of minimum 15mm or equivalent to 150cm² per meter should be maintained beneath windows or other openings where a sill is used. This ventilation gap is usually formed between the top edge of the facade boards and the bottom edge of the sill. It is recommended that the sill projects a minimum of 30mm beyond the front of the facade. This ensures that the water running from the sill does not enter nor drips onto the structure.



Installation

Horizontal



Step 7: Window reveals

Install the Swisspearl Plank Connect End Profile (1) near the window frame.

Start at the windowsill with a piece of Swisspearl Plank Connect that follows the angle of the windowsill as well as the joint of the planks installed on the front side of the facade.

Slide the first plank into the Swisspearl Plank Connect End Profile and fix this piece with a Swisspearl Facade Screw 4.5x41mm on the batten. Pre-drill the plank with a Ø5mm drill. Fixing should not be closer than 20mm from plank edges and should never be less than 16mm from timber batten edges.

Install the Swisspearl Plank Connect Clips as a next step and continue installing the planks.

The last piece also has to be cut to size and fixed with a Swisspearl Facade Screw 4.5x41mm. Pre-drill the plank with a Ø5mm drill.

Top of the window

At the top of the window a Swisspearl Plank Connect can be installed with a Swisspearl Facade Screw 4.5x41mm. Pre-drill the plank with a Ø5mm drill. Fixing should not be closer than 20mm from plank edges and should never be less than 16mm from timber batten edges.

A Swisspearl Plank Connect End Profile can also be installed against the window.

A horizontal free ventilation opening must be maintained above windows and doors. This ventilation gap must be at least 15mm wide.



Installation

Horizontal

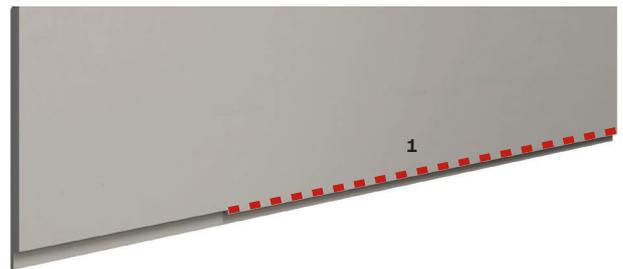
Step 8: Repair of broken or cracked planks

In case of broken or cracked planks near a roof trim it is recommended to take off all planks in order to replace the affected plank.

Broken or cracked planks in lower parts of the facade can be removed individually. Cut out the existing plank without damaging the already installed planks and clips.

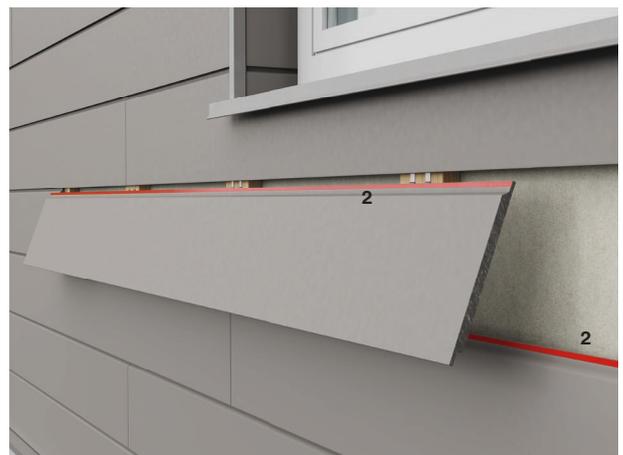


The new plank can be installed easily by cutting of the rear tongue at the bottom of the plank (1). In this way one can slide in the plank and push it in from beneath.



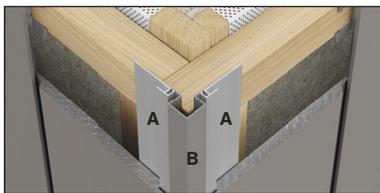
Remark: the backside of Swisspearl Plank Connect is shown here

To make sure the plank stays in place and in order to avoid flapping because of the wind, the plank should be fastened with a glue system (2) that is approved to be used together with fibre cement. The glue should be applied on the areas indicated in red. Make sure the board remains in place until the adhesive has cured.



Installation

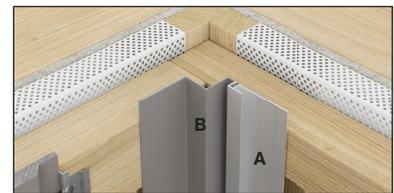
Vertical



Picture 1
A. Swisspearl Plank Connect Startprofile
B. Swisspearl External Corner Small



Picture 2
Swisspearl Connect clip



Picture 3
A. Swisspearl Plank Connect Startprofile
B. Swisspearl Internal Corner



Picture 4
A. Swisspearl Plank Connect Window Profile
B. Swisspearl External Corner Profile



Picture 5
Swisspearl External Corner Profile



Picture 6
Swisspearl Plank Connect Vertical Start Profile



Picture 7
A. Swisspearl Plank Connect End Profile
B. Swisspearl Ventilated Profile

Installation

Vertical



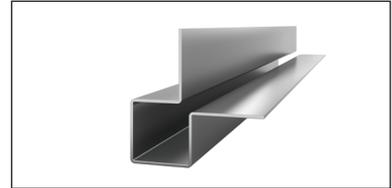
Swisspearl Plank Connect Window Profile

Extruded Aluminium
Thickness 1,1mm
Length 3000mm



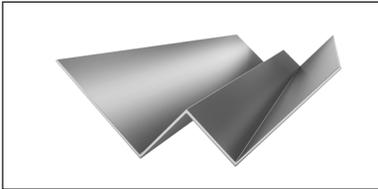
Swisspearl Plank Connect Start Profile

Extruded Aluminium
Thickness 1,1mm
Length 3000mm



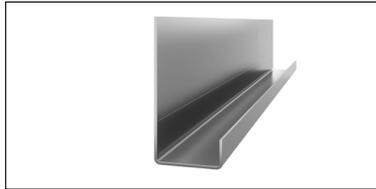
Swisspearl External Corner small

Painted Aluminium
Thickness 1.0mm
Length 3000mm



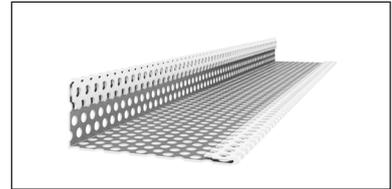
Swisspearl Internal Corner Profile

Painted Aluminium
Thickness 1.0mm
Length 3000mm



Swisspearl Plank Connect End Profile

Painted Aluminium
Thickness 1.0mm
Length 3000mm



Swisspearl Ventilated Profile

Perforated Steel
Thickness 0.6mm
Length 3000mm

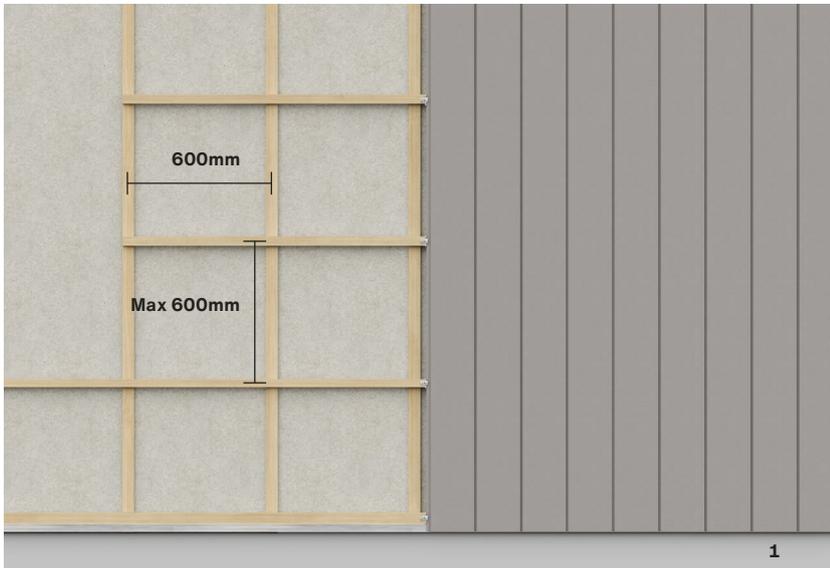


Swisspearl Plank Connect Vertical Start Profile

Extruded Aluminium
Thickness 1.1mm
Length 3000mm

Installation

Vertical



Installing Swisspearl Plank Connect on timber frame

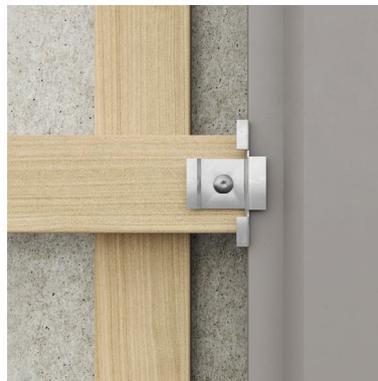
Max horizontal support distances: 600mm o.c

In this manual a default intermediate distance of 600mm between the vertical battens is used. This distance can be increased after consulting with a static engineer that also evaluates the size of the battens.

Max distance between centres of 2 clips: 600mm o.c

The distance to terrain from the bottom edge of the facade board should be a minimum of 150mm (1). The distance to flat roofs, balconies and other horizontal structures where the water can drain away can be a minimum of 50mm.

Never install more Swisspearl Plank on-top each other when installing them vertically. If more rows are needed then there has to be used a Swisspearl Plank Connect Vertical Start Profile for each new row.



The following screws can be used for this solution:



Swisspearl Plank Connect Screw
for fixing the clips on wood, SCR-W 4.2x30mm or SCR-W 4.2x40mm.



Swisspearl Facade Screw
for visible fixing of Swisspearl Plank Connect on wood, SCR-W 4.5x41mm.

Installation

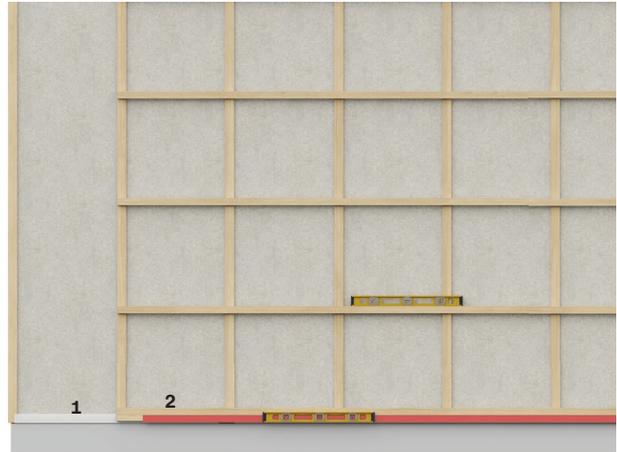
Vertical

Step 1: Support battens and Start Profile

Begin by installing the vertical battens on the wall. Next, install the horizontal battens onto the vertical battens. Utilize treated battens for the horizontal layer. The first batten at the bottom of the structure should have a minimum width of 75mm. Ensure that the first battens are leveled.

Regarding ventilation, the first batten can be placed to align with the bottom edge of the ventilation profile if there is a free ventilation gap from below. If not, there must be a minimum distance of 15 mm between the bottom edge of the ventilation profile and the bottom edge of the batten.

Align all battens correctly by making sure that there is an equal distance between battens at the top and at the bottom of the facade.



Fix the Swisspearl Plank Connect Vertical Start Profile (2) with Swisspearl Plank Connect Screws and level it well as this is the basis for a nice end result. The profile should follow the bottom edge of the horizontal batten, but due to possible unevenness, it can be positioned up to a maximum of 5 mm below. This allows for minor irregularities to be compensated, ensuring that the profile remains level.



The edge distance measured from the center of the clip to the end of the plank must not exceed 60mm.



Installation

Vertical

Step 2: External and Internal Corner Profiles

After installing the subconstruction the Swisspearl External Corner Profiles (1) and Swisspearl Internal Corner Profiles (2) should be installed.

Swisspearl Ventilated Profiles (3) should be installed horizontally on the vertical timber battens.

Create a fixed corner with two 100mm horizontal battens. This is valid for both internal and external corners and enables both the fixing of the profile and of the clips.

The horizontal battens should connect with the ventilation profiles.

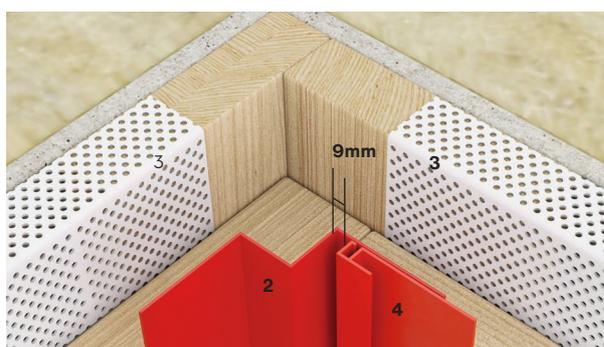
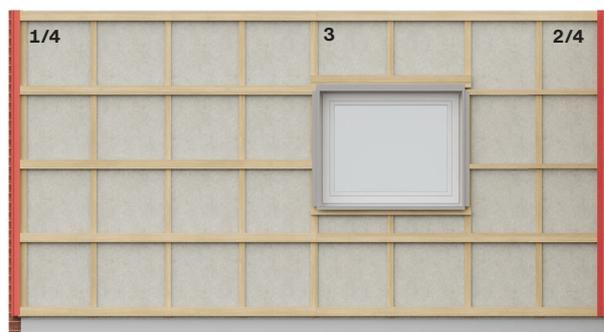
Install the corner profiles on the horizontal battens.

The profiles are fixed with flat head nails, mounted in pre-drilled holes of $\text{Ø}4\text{mm}$. Make sure the corner profiles are levelled before installing the Swisspearl Plank Connect Start Profiles (4).

When using Swisspearl Plank Connect for vertical installation, it can be installed from right to left or from left to right. In the picture to the right, the planks are installed from the corner outward in different directions, making it possible to use two starter profiles and no visible screws. However, at the opposite end, it will not be possible to use a starter profile. Here, the planks must be fastened with visible facade screws instead.

The Swisspearl Plank Connect Start Profile should be installed with Swisspearl Plank Connect Screws. Make sure there is a 9mm joint between the start profile and the corner profile.

When installing Swisspearl Plank Connect next to other building materials it is an esthetical advantage to use the Swisspearl Plank Connect End Profile (5).



Installation

Vertical

Step 3: Openings, side profiles and sill

Windowsill

When installing profiles around windows, start by installing the windowsill. The windowsill should slope slightly away from the window. The windowsill must protrude at least 30mm beyond the front of the facade.

Use the profiles on the sides of the window to determine the correct length of the windowsill. In our example the Swisspearl Exterior Corner Profile Small is used. The window sill should be made 12mm wider than the window opening. It is needed to make cutouts on both ends of the windowsill to make it fit between the window reveals. This recess can vary and it can be an advantage to bend it upwards so that water cannot penetrate the construction. Make sure to use a sealant to close the gap entirely.

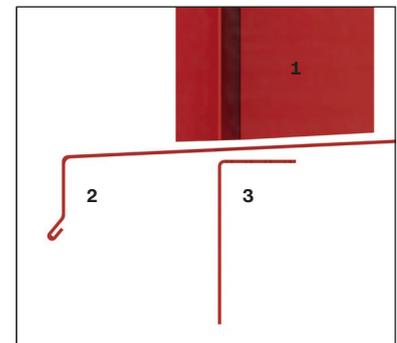
Cut the Swisspearl Exterior Corner Profile in the same angle as the windowsill so that it almost touches the window profile and water flows away from the facade.

Top of the window

In the top of the window a special cut out is needed. Cut the Swisspearl External Corner Profile in order to allow the Swisspearl Plank Connect Window Profile to pass. The window profile should stop at the end of the corner profile.



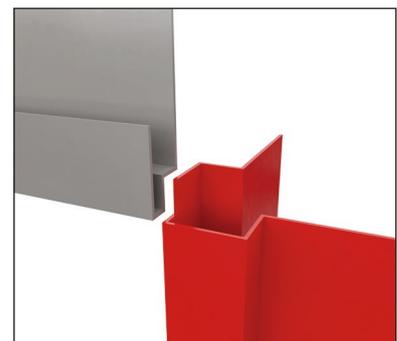
Windowsill



1. Swisspearl Exterior Corner Profile Small
2. Windowsill
3. Swisspearl Ventilated Profile



Upper side



Installation

Vertical

Step 4: Installation of Swisspearl Plank Connect

Start installing the Swisspearl Plank Connect onto the Swisspearl Plank Connect Vertical Start Profile. Level the planks. Install the planks with 1 Swisspearl Plank Connect Screw per Swisspearl Plank Connect Clip.

In the case of windows or other openings, it may be necessary to install an additional batten or one that is wider than the 75mm used at the bottom during installation. This is done to ensure that the Swisspearl Plank Connect clip is not mounted on the edge of the Swisspearl Plank Connect Window Profile. The clip must not be mounted over this profile

When possible, it should be avoided to install the clip on top of a profile.

Fixing should never be less than 16mm from timber batten edges.

The last Swisspearl Plank Connect needs to be installed with a visible screw. Pre-drill the plank with a $\varnothing 5\text{mm}$ drill and apply a min. edge distance of 20mm. A joint of 5mm needs to be foreseen between the plank and the Swisspearl Internal Corner Profile.

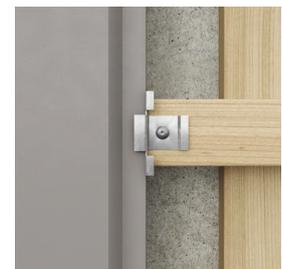


Fig. 1

Installation

Vertical

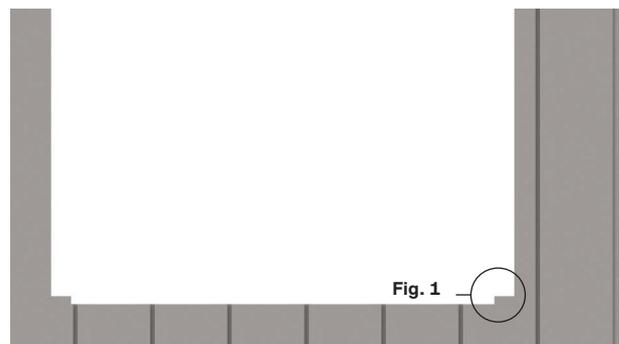
Step 5: Installation of Swisspearl Plank Connect around window openings

Cut out the Swisspearl Plank Connect so that they fit perfectly against windows and doors. Take also the shape of the windowsill into account. A 5mm joint must be foreseen between profiles and planks.

Swisspearl recommends to foresee joints at both ends of the window in case the remaining height of the Swisspearl Plank Connect drops below 40mm (1). In this way the risk of cracking or breaking is avoided.

To make the air gap under the windows less visible it is possible to make the 40mm (2) at the ends of the window-sill 15mm higher. This way you will still have the ventilation area and it will be less visible.

The Swisspearl Plank Connect Clip can be fixed with one of the 3 foreseen holes.



Swisspearl Plank Connect window solution

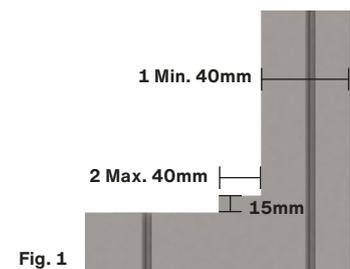


Fig. 1

A horizontal ventilation opening of minimum 15mm or equivalent to 150cm² per meter should be maintained beneath windows or other openings where a sill is used. This ventilation gap is usually formed between the top edge of the facade boards and the bottom edge of the sill. It is recommended that the sill projects a minimum of 30mm beyond the front of the facade. This ensures that the water running from the sill does not enter nor drips onto the structure.



Installation

Vertical

Step 6: Window reveals

Install the Swisspearl Plank Connect between the Swisspearl Exterior Corner Profile (1) and the window.

Planks at window reveals must be fixed with visible fixings. Pre-drill the plank with a Ø5mm drill. Fixing should not be closer than 20mm from plank edges and corners and should never be less than 16mm from timber batten edges.

Cut the bottom side of the plank in the same angle as the windowsill and leave a 5mm joint between plank and windowsill.



Start from the side opposite to the window (2) by installing a piece of a plank equal to the width of the vertical batten above but not less than 40mm wide. Remove the tongue and groove of the plank to allow ventilation inlet above the window.

Do the same with the next plank (3). There must be a gap of 15mm between the two planks to allow for proper ventilation.

Pre-drill the plank with a Ø5mm drill. Fixing should not be closer than 20mm from plank edges and corners and should never be less than 16mm from timber batten edges.

The vertical planks are placed into the horizontal Swisspearl Plank Connect Window Profile. To ensure that the Swisspearl Planks are held securely, Swisspearl Plank Connect clips must also be installed above openings. These clips are mounted with a small gap to the horizontal profile. This entails either using a wider batten or installing two horizontal battens over openings.



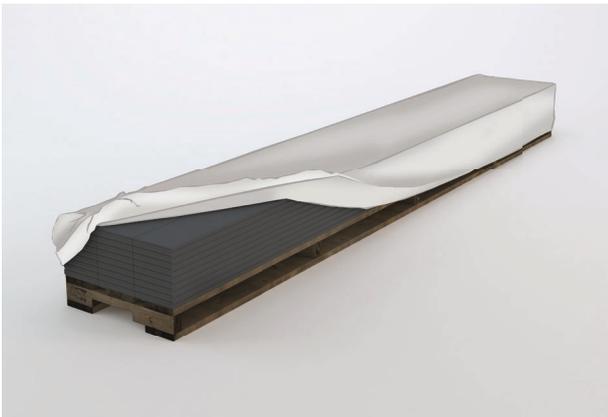
Storing and Handling



Store the pallets on a dry and level surface.



A maximum of 4 panel or 4 plank pallets can be stored on top of each other.



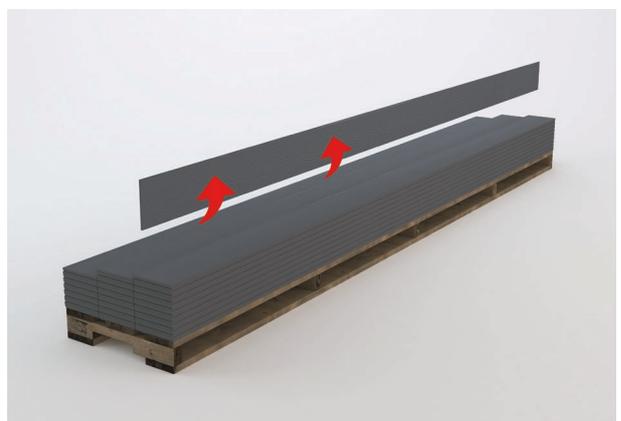
The original packaging may have sustained damage from transportation. Remove the plastic packaging immediately upon delivery at the building site, to avoid risk of efflorescence.



Important: Store materials under a dry and well-ventilated tarpaulin. If the product becomes damp, it should be placed on its vertical edge to allow rapid drying. Never install wet products.



If storing on site for more than 2-3 weeks, the products should be kept under a roof. A maximum of 4 panel or 8 planks pallets can be stored on top of each other.



Do not drag products from the pallet, as it may leave permanent scratch marks. Lift the product by its narrow edge as it may break if handled incorrectly.

Health and Safety

Avoid breathing silica dust

As with all other building materials, adherence to local building rules and regulations when working with Swisspearl products is required. Working with crystalline silica containing products should be conducted in well-ventilated conditions by use of simple and effective precautions.

When cutting, grinding or drilling, respirable crystalline silica is released. Breathing large amounts of dust may cause irritation to respiratory functions, eyes and/or skin.

Therefore wear personal protection equipment (Safety goggles, safety suit and a respiratory mask - P2 marked) See safety data sheet for full information. Ensure adequate ventilation at workstation. Remove dust after installation with water to suppress airborne dust particles.

Care & Maintenance

On-site

Cleaning of boards after cutting and drilling

It is important to immediately remove dust caused by cutting and drilling from the front and rear of the boards with a soft brush/duster or a vacuum cleaner, as it otherwise might damage the boards. Ensure that the boards are properly cleaned before installation, and if necessary use clean water or water with a mild detergent and a soft sponge or brush to remove dirt and dust from the surface. Thereafter, wipe the boards with a damp cloth. It may also be necessary to wash the surface after installation if the building site conditions have been unfavourable. This is done with lots of clean water or water with a mild detergent and a soft sponge or brush and finally wiping the boards with a damp cloth.

Removal of calcium-based residues

Calcium carbonate residue may occasionally be seen on the board surface. This can be difficult to remove with water or even with detergents because it does not dissolve in water. For cleaning purposes 10% acetic acid (CH_3COOH) solution is used to dissolve the calcium compounds.

Note! Carefully observe safety precautions (MSDS) when working with acetic acid. R-phrase R36/R38 is valid: "Irritating to eyes, respiratory system and skin". Use proper clothing, nitrile rubber gloves, eye protection goggles and approved respirator (filter A, E or A/E).

Carry out the mixing outdoors. Apply the diluted 10% acetic acid solution evenly with a spray can to the surface of the stained board. Leave it to react for a few minutes. Do not allow the solution to dry, but rinse with lots of clean water. Repeat the process if necessary and rinse with water afterwards.

Note! Do not execute the cleaning process with acetic acid in direct sunlight or on hot surfaces. This might create permanent stains.

Cleaning of neighbouring areas

Windows and glass in particular but also other adjacent areas must be kept clean during the facade board installation and if necessary protected with plastic film. Alkaline leaching from cement bonded materials (dust from cutting or drilling holes in structural concrete, etc.) is prone to damaging glass and other materials. Therefore, frequent cleaning during and after the construction period is needed.

Surface damages and scratches

Damages and scratches should be avoided by lifting the boards off the pallet and handling them carefully during installation. Scratches might leave white streaks on the surface which will turn dark when exposed to rain, because the board absorbs water through the scratch.

Care & Maintenance

After installation

Annual Inspection

Normally Swisspearl facade boards do not require any maintenance. Weathering may however influence the appearance of the facade. Therefore, an annual inspection of the ventilation gaps, joints and fixings is a good idea.

Detection and repair of possible damage ensures a prolonged lifespan for the facade.

Cleaning

Swisspearl facade can be cleaned with cold or lukewarm water if necessary with the addition of a mild household cleaning agent not containing solvents. Always start from below with well-defined areas. Rinse with plenty of clean water until the facade is perfectly clean. Before cleaning full scale, it is recommended to test the chosen cleaning method on a smaller area to ensure it works and does not damage the board surface.

High-Pressure Cleaning

Warning! High Pressure Cleaning is a severe treatment for fibre cement facade. Exaggerated or wrong use of a high pressure cleaner may damage the surface. Therefore, High Pressure Cleaning is not recommended.

Moss & algae

Moss and algae growth can be removed with common agents available on the market. Care should be taken to ensure that the cleaning agent does not cause damage to the surface of the Swisspearl facade boards.

Confirm the compatibility of your cleaning agent with your cleaning agent supplier, and ensure it is applied according to the supplier's instructions. It is advised that before conducting a large-scale application a test is carried out on a small, inconspicuous area to ensure that the cleaning agent has no effect on the colour of Swisspearl facade boards.

Efflorescence

Efflorescence is a naturally occurring, white, powdery deposit that can appear on cement-based building materials (including bricks, cement walls, grout, and fibre cement). It is the result of a process in which moisture draws salt crystals to the surface, evaporates, and leaves a chalky substance behind. Efflorescence occurs when all three of the following conditions exist:

1. Water-soluble salts are present in the building material.
2. There is enough moisture in the wall to turn the salts into a soluble solution.
3. There is a path for the soluble salts to get to the surface.

Efflorescence may also be a sign of water ingress behind the facade. Make certain that all openings are properly covered and there is no water intrusion due to over-driven nails. While some efflorescence may weather away naturally on its own, it is best to take steps to treat it.

Efflorescence can be removed with household white vinegar and water. For most cases of efflorescence, Step 1 - 3 works well. But for substantial deposits of efflorescence go to Step 4.

For best results, follow these cleaning instructions:

1. Protect areas that are not to be cleaned. Rinse all plants and vegetation around the facade with water before and after application of the vinegar.
2. Generously coat the entire surface area with vinegar. Allow the solution to sit on the surface for 10 minutes.
3. Rinse the treated area thoroughly with water from the top down and allow the area to air dry.
4. For extra tough efflorescence:
Use a 10% acetic acid solution and apply to affected area with a cotton cloth. A light scrubbing with the cotton cloth may be required. After about 20 seconds rinse with water.



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