



Facade panel bonding

Introduction

The use of HPL-facade panels has strongly increased since the classical facade panelling, which was usually made of plywood. The choice of these new building materials is usually based on the fact they need almost no maintenance and give good results without painting.

Mechanical fixation can be applied to these panels. This has 2 disadvantages:

- ▶ Aesthetically: finishing with screws and cover-caps is less beautiful and sophisticated.
- ▶ Screws must be applied cautiously, as the panels will shrink and expand under the influence of temperature. This means screws cannot be fixed too tightly, and a "lock hole" should be made in the panel instead of a screw hole, allowing the panel to shrink and expand freely.

This is why bonding of the panels is an attractive option. Bonding without screws is aesthetically more pleasing and a necessity of the panels can be absorbed by the layer of a adhesive. This also offers the opportunity to choose a thinner panel.

Den Braven offers a complete portfolio of materials specifically for bonding these panels.

Applying these materials in the correct manner will offer strong and durable bonding. In order to achieve this it is important to follow the directions given below.

Products

For bonding of HPL- and cement-fibre panels the products below are supplied:

1. Zwaluw Panelfix®

A very strong, fast hardening and durable elastic adhesive based on a moisture curing MS-Polymer.

Properties:

- ▶ Maintains elastic with high tensile strength (max. 2,2N/mm²). Max. stress in practice 0,22N/mm²
- ▶ Good distribution of stress in case of shrinking or expanding panels.
- ▶ Ageing, weather and vibration proof
- ▶ Odour free, solvent and shrinkage free
- ▶ Simple and quick application.
- ▶ Forms a skin within 10 minutes.
- ▶ Curing speed around 2 - 3mm per 24 hours.

2. Zwaluw Paneltape

A double sided self-adhesive HDPE-tape affixes the panel during curing of the bond and offers the correct thickness of the adhesive.

Properties:

- ▶ High instant tack.
- ▶ Flexible, absorbing small irregularities in the surface.
- ▶ Size: width 12mm - thickness 3mm.

3. Zwaluw Panel Cleaner

Cleanses panel and frame work, removes uncured residues of Panelfix®.

Properties:

- ▶ Removes grease and dust and does not leave marks.
- ▶ Quick and total evaporation

4. Zwaluw PF Primer

Is a dedicated Primer for treatment of wooden frameworks. PF Primer also prevents fungi and rotting wood. The PF Primer coats the joints between the panels in a universal black finish. No rubber profiles are needed.

Properties:

- ▶ Creates a good bonding surface for Zwaluw Paneltape and Zwaluw Panelfix to bare wood.
- ▶ Curing time: minimum 60 minutes
- ▶ Use primer on the same day as bonding the panels.

Application

For bonding facade panels, facias, eaves, ceiling coverings, wall coverings, awnings, etc.

Circumstances during application

For bonding facade panels the temperature should be at least + 10°C with a maximum of + 30°C.

Placement of big, dark coloured panels exposed to intensive direct sunlight should be avoided. Surfaces must be clean, dry, free of dust and grease.

Do not place in wet weather or times when condensation could appear on the panels.

Building construction and Primer

The beams where the panels are bonded to can be made of wood or aluminium. When the aluminium is coated in advance a bonding test with Zwaluw Panelfix® must be done to be sure of good bonding to the coating. Aluminium surfaces need to be cleansed with Zwaluw Panelcleaner before panel fixation. Tissues or non-pilling cloth can be used. Regularly replace tissues and or cloth.

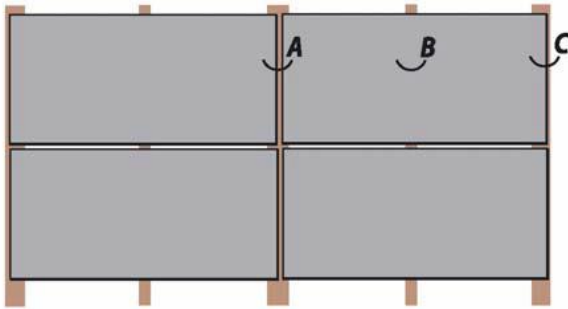
Wooden beams need to be planed, clean and free of grease. Use Zwaluw PF primer all over the wood (drying time at least 60 min.) Impregnated wood (Use primer on the bonding side) can only be used when no oil-based preservative is used.

The beam frame must be placed vertically with an inner distance between the beams of 400mm to 650mm, depending on the thickness of the panels, the building height and directions provided by the manufacturer of the panels.

Thickness of the beams: 19mm (important for necessary ventilation behind the panels).

Width of the beams: Dependent to the position of the beam:

- ▶ End beams: 70mm (at the end of panel see drawing 1-C)
- ▶ Intermediate beam: 55mm (beam totally behind the panels. See drawing 1-B)
- ▶ Butt beams: 70mm (beams acting as connection for 2 panels. See drawing 1-A)



Drawing 1

After placement the beams need to offer a flat surface, enabling the panel to fully contact the beam frame. Connection of the beams to the base must be strong enough to cope with wind-pressure as stated in NEN 6702.

Panels

Clean panels at place of bonding with Zwaluw Paneldeaner. Replace used tissues and cloths regularly. Allow the cleaner to dry for 5 minutes before further bonding.

The panels need to be straight in length and width dimensions. (Check with a straight ruler). Thickness of the panel is minimum 6mm and maximum 13mm. Length of the panel is maximum 2550mm.

Although Zwaluw Panelfix has outstanding bonding properties, and generally can be applied directly to the panels without a primer, some panels have a different surface, causing insufficient bonding. When unsure please complete a bonding by a test to the specific panel surface.

Application of Zwaluw Paneltape

Apply Zwaluw Paneltape vertically to the beam frame. Guide tape while applying, so the result will be as straight as possible. Do not extract the tape while applying, also do not apply too loose.

In case of wooden beams, Zwaluw PF Primer must dry for at least 60 minutes.

In case of metal beams, make sure they are dry and no moisture is present. On intermediate beams (45mm - 60mm) tape is applied over the total length of the beam. On the end beam (70mm - 90mm) tape is applied on the outside of the beam over the total length. On butt beams (beam between two panels 70mm - 90mm) 2 lengths of Paneltape are applied, so each length bonds one panel.

Keep the tape on the outside of the panels (middle of the beam) leaving space to apply the Panelfix® adhesive.

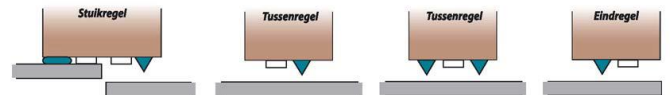
Application of Zwaluw Panelfix®

Apply Zwaluw Panelfix® with the "V-shape" nozzle supplied. This nozzle prevents air lock-in between panel and Panelfix®. This also ensures the correct layer of Panelfix®, neither too small nor too wide, and the use of Panelfix® is optimised.

When Panelfix® is applied the curing starts, noticeable by the formation of a "skin" after a approximately 10 minutes.

For secure bonding it is necessary to place the panels within 10 minutes, before formation of the skin.

Before application of Zwaluw Paneltape and Panelfix® see below:



Placement of the panels

Directly after applying the Zwaluw Panelfix® (at least within 10mins.) remove the protective foil from the applied Zwaluw Paneltape and lightly press the panel in the correct position to the Panelfix®, where minimal corrections to the position can still be made. After this, push the panel down hard to get good contact with the Paneltape. Take care to have joints between the panels which are at least the size of the thickness of a panel. Thicker panels might need support for some time.

General

The space behind the panels needs to be ventilated, so a depth of at least 20mm is needed (Normally achieved by the thickness of the supporting beams).

This space behind the panels may not be blocked by e.g. horizontal beams. On the upper and lower side of the panels openings need to be present for ventilation.

Warranty

Den Braven Sealants warrants that the product complies, within its shelf life, to its specification.

The liability shall in no case exceed the amount fixed in our Condition of Sale.

In no event is Den Braven Sealants liable for any kind of incidental or consequential damages whatsoever.

Liability

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