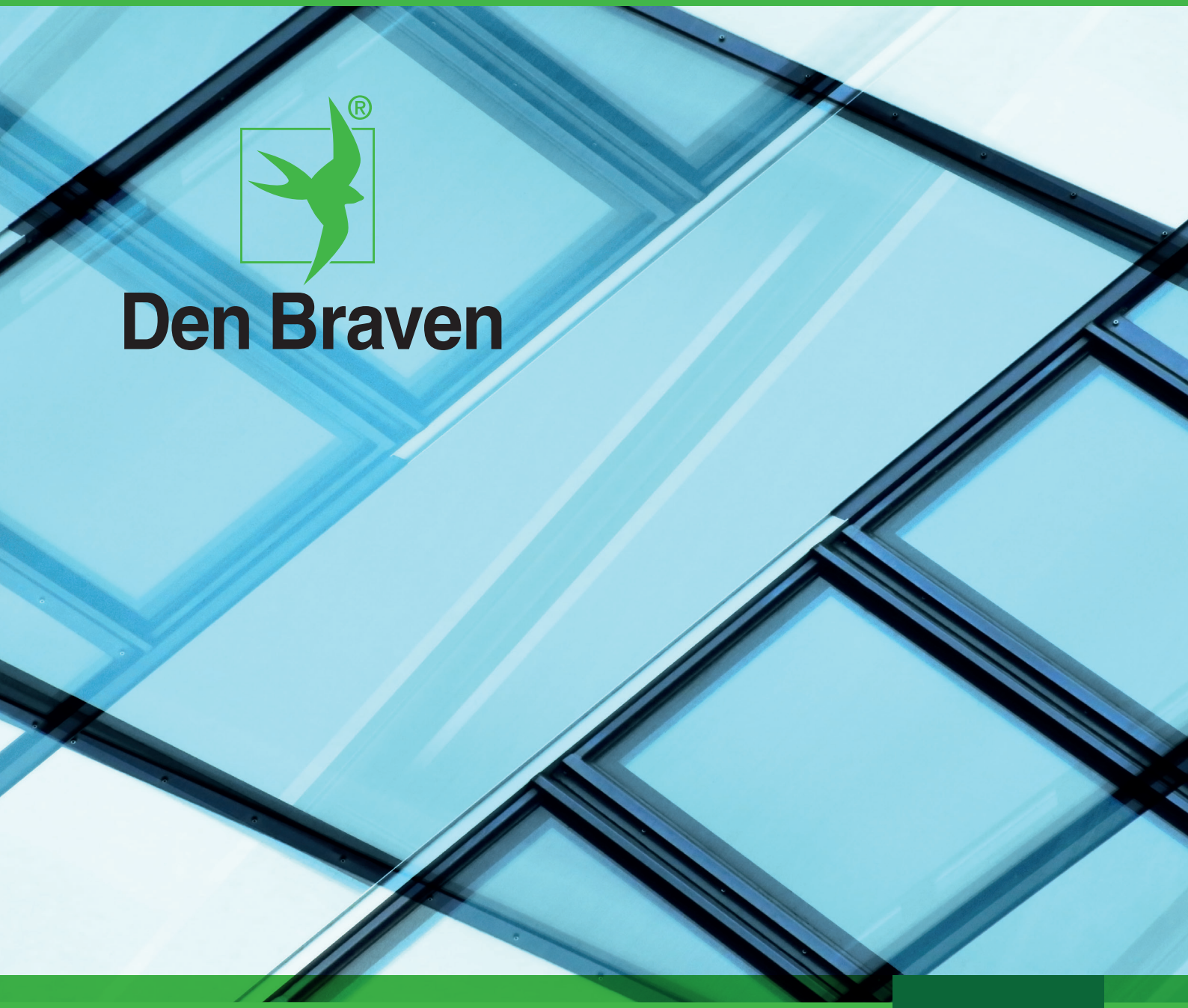

Den Braven

Airtightness of uPVC and aluminium window frames

Technical Bulletin TB122013-017

KNOWLEDGE

EDUCATION

BETTER RESULTS THROUGH KNOWLEDGE

Technical Bulletin TB122013-017

The Sustainable Airtight Building Solutions by Den Braven is a concept that consists of products tested and certified according air loss, noise insulation, driving rain resistance and thermal insulation

Introduction

When uPVC and aluminium window frames are assembled in a new building or renovation project, Den Braven is able to provide a suitable solution to achieve compliance with current and new building regulations. Joint connections should be treated with high end products to fulfil the passive house regulations.

Air loss

To reduce the air loss as much as possible Den Braven can offer a complete product range we call Sustainable Airtight Building Solutions. The regulation around airtightness is not new. It is already a requirement in the building directives. The idea behind an airtight building is not a synonym to live in a plastic bag. An airtight building is nothing less than reducing unwanted air leakage (exfiltration) or the intrusion of cold air (infiltration). An airtight building will ventilate by appropriate methods such as a heat recovery system, mechanical ventilation and of course, natural ventilation.

Den Braven can provide support in determining the ventilation rate of your house. The ventilation rate is a value that indicates how much air your house will lose per hour in relation to the content of the building. In addition to that Den Braven can recommend the correct product choice for airtightness, thermal insulation, noise reduction and rain resistance. A thermal insulating product will prevent condensation in the construction and therefore increase the durability of your property. Lastly, we will create water repellent outer seals that are permeable (or diffuse open).

Products

To correctly install airtight uPVC and aluminium windows for thermal and sound insulation Den Braven recommends the following products:

Zwaluw Elast-O-Foam
Zwaluw Window Foil Interior
Zwaluw Foliefix®SPUR
Zwaluw Montagefix-W
Zwaluw Cleaner

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Technical Values
Zwaluw Window Foil Interior

air loss / permeability:
a_n <0,1m³/hm¹*

sd value: 39 m

fire class: B2

waterproofness: 3000 nm

elongation at break: 134%

tensile strength: 50 N/5 cm

Application Guideline

Follow these simple illustrated step-by-step instructions:

Step 1

- Thoroughly clean the frame with Zwaluw Cleaner
- Thoroughly clean the bonding surfaces of the construction and make sure there are no loose parts, holes or contaminants that can adversely affect bonding

Step 2

- Apply the Zwaluw Window Foil Interior with the standard adhesive strip to the window frame
- Zwaluw Window Foil Interior must be applied in such a way that the foil can be positioned on the inside of the wall

Step 3

- The intention is to apply a continuous airtight connection.
- Zwaluw Window Foil Interior to be applied through the corners, with an excess of 30 - 40mm
- Stick/connect the excess to each other, so "dog ears" occur

Den Braven offers products that are tested for air loss, thermal insulation, driving rain resistance and noise reduction. To simplify this concept of Sustainable Airtight Building Solutions we have created icons for our products so you will be able to choose the correct product based on application/functionality

Step 4

- Zwaluw Window Foil Interior must be applied continuously around the frame and the overlap between the beginning and end of the foil must be at least 100mm
- Using masking tape attach the foil to the inside of the frame for easy mounting.

Step 5

- Install the window frame according the specifications set by the frame manufacturer/supplier

Step 6

- Surfaces must be clean and free of grease
- Surfaces to be slightly dampened with a flower sprayer

Step 7

- Take the Zwaluw Elast-O-Foam and remove the top lip
- Attach the polyurethane foam gun to the canister Zwaluw Elast-O-Foam
- Shake the canister Zwaluw Elast-O-Foam 20x thoroughly
- Protect eyes, wear gloves and protective clothing
- Open the locking screw at the rear of the polyurethane foam gun before applying the Zwaluw Elast-O-Foam
- It is possible the gap between the window frame and wall must be filled both from the inside as well as the outside

Step 8

- Allow the Zwaluw Elast-O-Foam to cure at least for 45 minutes before removing any excess.

Step 9

- After removing any excess Zwaluw Elast-O-Foam, adhere the Zwaluw Window Foil Interior to the Zwaluw Foliefix®SPUR or Zwaluw Montagefix-W
- Apply the adhesive continuously without any interruptions to prevent air leakage
- Apply a enough adhesive to overcome any unevenness

Technical Values Zwaluw Elast-O-Foam

air loss / permeability: $a_n < 0{,}1 m^3/hm^1$*

yield: ca. 45 litre

fire class: B3

density after curing: 25 kg/m^3

noise reduction: R_{STW} = 63 dB

* according EN 1026 test report the result is that no air loss was measured

Step 9

- Remove the masking tape and the and Zwaluw Window Foil Interior from the window frame
- Apply Zwaluw Window Foil Interior to the wet adhesive and press firmly into place
- If needed use a soft roller to ensure optimal adhesion between the surface and Zwaluw Window Foil Interior

Den Braven strives to offer environmentally friendly products

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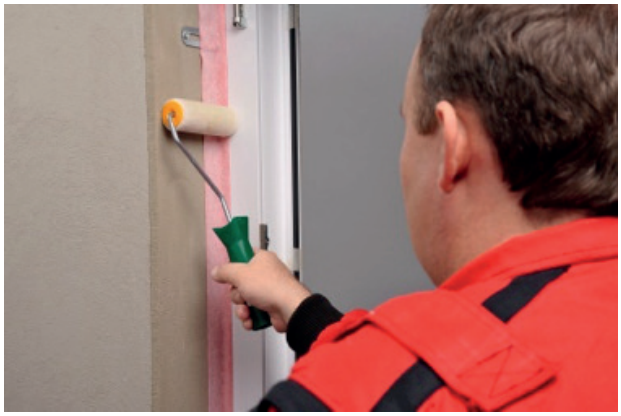
Per linear meter window frame connection, you have the following values of a frame depth of 70 mm:

air loss 0,00001 litre/hour

thermal insulation R_c joint = 2,3 m^2 K/W



Step 11

- Apply extra adhesive to the corners to ensure optimum adhesion of the Zwaluw Window Foil Interior

Step 12

- To ensure an 100% airtight connection between the window frame and wall the mounting anchors should be covered by patches
- Cut rectangles/squares from the Zwaluw Window Foil Interior larger than the anchors, and apply Zwaluw Foliefix®SPUR or Zwaluw Montagefix-W.
- Apply the patches over the anchors and the applied Zwaluw Window Foil Interior
- Press firmly into place

Step 13

- Interior work may be continued by applying plaster or any other finishing process
- Zwaluw Window Foil Interior can be plastered and painted

Step 14

- An additional barrier should be applied to the outside of the window/wall connection, creating a barrier that is permeable and resistant to driving rain.
- Depending on the detail or system, the following products can be chosen:

  Zwaluw Airtight Foil (Primerless)

  Zwaluw Window Foil Exterior

  Zwaluw Compress Band BG-1

  Zwaluw Hybriseal® Façade

  Zwaluw All-in-one-Seal

- The golden rule for placing external joint seals is that they should prevent water coming into the construction but are permeable (breathable)
- When choosing an elastic sealant Den Braven strongly recommends keeping a rectangular opening on both sides of the joint, to create correct ventilation.