



BUILDING ENVELOPE SYSTEM

Window Opening Sealing Application Guide

Airtight and weatherproof frame-to-wall connection details for high-performance windows and doors.

Waterproof Vapor-Open Tape

Waterproof Vapor-Control Tape

Pre-Compressed Expanding Sealing Tape



Use

Outboard, in-wall and flush installation details

Audience

Architects, contractors, distributors and technical buyers

Focus

Water control, air control, vapor strategy and thermal continuity

BUILDING SCIENCE BASIS

Four control layers at the frame-to-wall joint

The window or door opening interrupts the main wall layers. A durable detail must restore the water, air, vapor and thermal control functions as a coordinated system.

W

Water

Drain outward with shingle-lapped exterior details, sill treatment and flashing where exposure requires it.

A

Air

Keep the air-control connection continuous, pressed and inspectable around the full opening.

V

Vapor

Use the vapor-control and vapor-open sides as a coordinated strategy without trapping incidental moisture.

T

Thermal

Keep the middle joint continuously filled with compatible insulation or expanding sealing tape.

Important Note

This guide describes general application methods for Vantell waterproof vapor-control tape, waterproof vapor-open tape and related sealing products at window and door openings. Actual installation must be confirmed against project drawings, window and door system requirements, wall assemblies, climate conditions, substrate materials and applicable local codes.

The interior/exterior vapor strategy shown here is a product-system approach and should be checked by the project designer for drying capacity and condensation risk.

Basic Principle

Interior side: airtight and vapor-controlling where required by the wall design.

Exterior side: weatherproof and vapor-open to maintain outward drying where the assembly depends on it.

Middle layer: insulated and continuously filled. The overall joint should be continuous, drained, compatible and inspectable.

SCOPE

Applicable installation positions

This guide applies to sealing connections between window or door frames and wall openings in passive-house, high-performance and high-airtightness buildings.

Outboard Installation

The frame is outside the primary wall line or within the exterior insulation zone. Focus on exterior weatherproofing, fixing brackets, sill drainage and head flashing.

In-Wall Installation

The frame is located within the wall thickness. Focus on continuity between the interior air/vapor control layer, exterior weather barrier and insulated middle joint.

Flush Installation

The frame is approximately flush with the finished wall surface. Focus on tape flatness, finish interfaces, plaster compatibility and follow-on protection.

MATERIALS

System components

Vapor-control tape	Interior airtight and vapor-control connection.
Vapor-open tape	Exterior weatherproof, vapor-open connection.
Expanding sealing tape	Joint insulation, compression sealing or middle-layer continuity where specified.
Primer / conditioner	Adhesion support on porous, dusty or difficult substrates when required by testing.
Sill pan / flashing	Controlled drainage at sill or head conditions.
Packers / brackets	Frame support, alignment and mechanical connection to structure.

Tools

- Level
- Measuring tape
- Utility knife
- Pressure roller
- Scraper
- Brush
- Cleaning cloth
- Gloves

Wall assemblies, climates, window systems and facade finishes vary by project. Final details must be confirmed by the project designer, window system supplier, general contractor or responsible site technical lead.

PROCESS

Step-by-step installation sequence

Throughout installation, verify two continuous lines: the interior air/vapor control line and the exterior weatherproof vapor-open line.

01

Clean the opening and verify dimensions.

02

Confirm frame elevation and position.

03

Install treated support timber or setting blocks where required.

04

Pre-apply interior waterproof vapor-control tape to the frame.

05

Pre-apply exterior waterproof vapor-open tape to the frame.

06

Install and mechanically fix the window or door.

07

Fill the middle joint with insulation or expanding sealing tape.

08

Bond and roll the interior tape to the wall substrate.

09

Bond and roll the exterior tape to the weather barrier or substrate.

10

Reinforce corners, overlaps, brackets, packers and penetrations.

11

Install sill pan, flashing and interior/exterior finishes.

12

Complete final inspection and protect finished layers.

Pre-installation checks

- ☐ Opening size, level, plumb, elevation and in/out position are verified.
- ☐ Substrate is sound, flat, dry and free of loose dust, oil, release agent, loose mortar and sanding.
- ☐ Porous substrates have been adhesion-tested and primed if required.
- ☐ Frame bonding surface is clean, dry and free of dust, oil and moisture residue.
- ☐ Weather and substrate conditions are within the product's permitted installation range.

CONSTRUCTION PHOTOS

Pre-applying tape to the frame

Keep tape straight along the frame edge. Do not overstretch it. Use a pressure roller so the adhesive layer makes continuous contact with the frame surface.

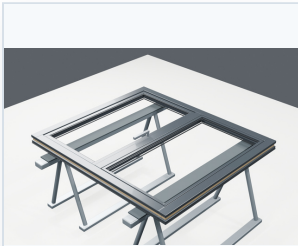


Figure 1. Frame laid flat with the interior side facing up.

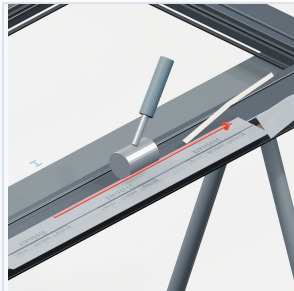


Figure 2. Start pre-applying vapor-control tape from the frame side.

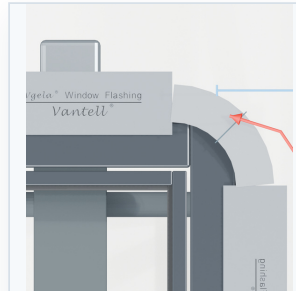


Figure 3. Corner allowance and folded corner treatment.



Figure 4. Overlap allowance reserved and pressed firmly.

Corners and overlaps

Frame corners are weak points in the air seal. Provide sufficient tape allowance to form an unfoldable corner fold or looped corner. Corner allowance is recommended to be not less than 1.5 times the installation gap between frame and wall.

Tape overlaps are recommended to be not less than 50 mm. At overlaps, remove the release liner, bond tape-to-tape and press firmly with a roller.

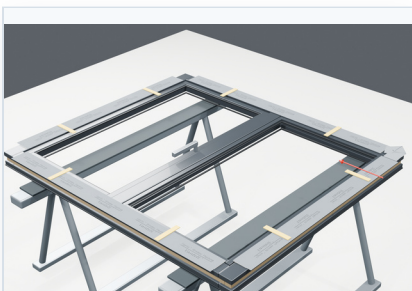


Figure 5. Tape folded inward and temporarily held in position.



Figure 6. Exterior-side pre-application after turning the frame over.

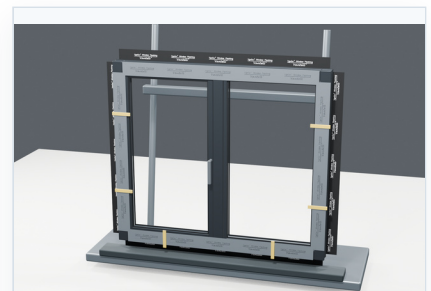


Figure 7. Pre-applied tape completed around the frame.

CONSTRUCTION PHOTOS

Frame installation and bonded connections

Interior airtight connection

After the frame is fixed, unfold the interior waterproof vapor-control tape. Remove the release liner slowly and bond the tape flat to the wall substrate without forced stretching. The effective bonding width to the wall is recommended to be not less than 50 mm.

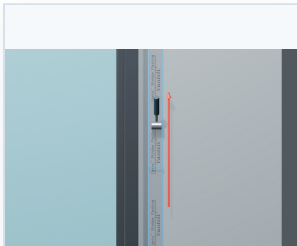


Figure 8. Tape unfolded and bonded to the wall substrate.

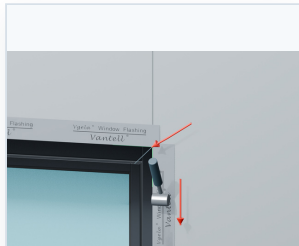


Figure 9. Corner area pressed into the angle and dressed flat.



Figure 10. Outboard frame and fixing brackets installed.

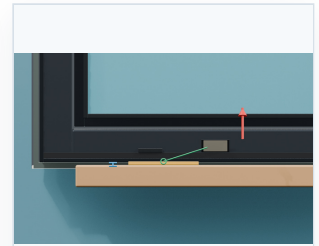


Figure 11. Packer and lower joint position checked.

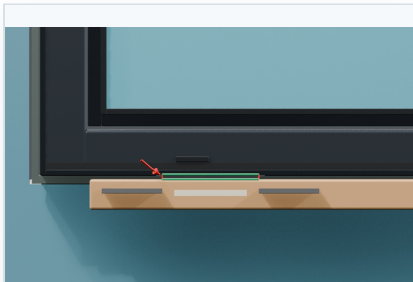


Figure 12. Lower tape wrapping around the packer.



Figure 13. Tape cut and bonded to the wall surface.

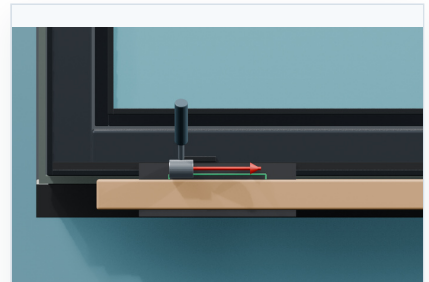


Figure 14. Packer and adjacent wall substrate pressed firmly.

REINFORCEMENT

Fixings, packers and penetrations

In outboard windows or some high-performance systems, fixing brackets, support timbers and packers may pass through or affect the exterior weatherproof layer. Treat these as reinforced details.

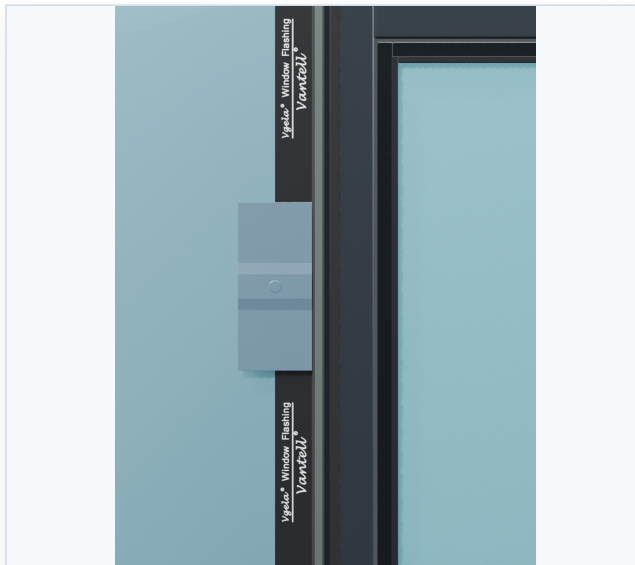


Figure 15. Reference detail after exterior tape is bonded.



Figure 16. Reference view of the completed exterior condition.

Cover fixing brackets

Cut waterproof vapor-open tape to cover the bracket body and adjacent substrate. Extend coverage at least 50 mm beyond the bracket zone where practical.

Wrap bottom packers

Cut and bond tape around the packer shape so the gap between packer, frame and wall remains continuously covered.

Maintain continuity

Keep the air-control layer and waterproof layer continuous around treated support timber. Do not leave unsealed channels.

TECHNICAL DIAGRAMS

Membrane layout and minimum tape width

The diagrams illustrate typical layout and width concepts for vapor-control and vapor-open membranes in different installation positions. Final width should be confirmed against the window or door system, wall assembly and project details.

Vapor-Control Side

Interior airtight and vapor-control connection

Vapor-Control Membrane Application and Width

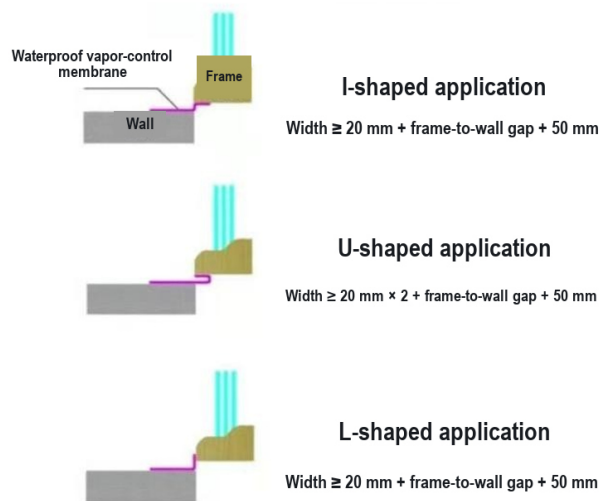


Figure 17. Vapor-control membrane layout and minimum tape width.

Vapor-Open Side

Exterior weatherproof and drying-capable connection

Vapor-Open Membrane Application and Width

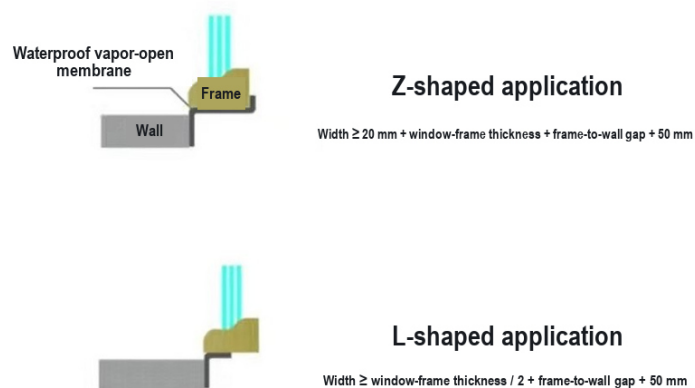


Figure 18. Vapor-open membrane layout and minimum tape width.

Design confirmation point

Confirm final tape width, sill slope, flashing type, upstand height, drip-edge detail and facade interface against project drawings. This guide provides product application logic only and does not replace project-specific design.

DESIGN COORDINATION

Sill, flashing and position-specific focus

Sill and flashing detail

The sill area is one of the highest-risk locations for water leakage and should be treated as a priority. The sill substrate should slope outward where specified so water does not drain inward or remain at the lower joint. Sill tape should be installed first and should form shingle-lapped continuity with the side tapes. For outboard installations or highly exposed conditions, head flashing or a drip detail is recommended.

Design rule

The detail should shed bulk water outward, preserve air-control continuity and avoid trapping incidental moisture inside the assembly.

Position	Key installation points
Outboard	Connect exterior vapor-open tape continuously between frame and weather-resistive layer. Reinforce fixing brackets, support timber and packers. Maintain sill drainage continuity. Use head flashing where exposure requires it.
In-wall	Connect interior vapor-control tape to the interior airtight layer and exterior vapor-open tape to the weather barrier. Fill the middle joint continuously. Do not interchange interior and exterior tapes. Avoid a double-sealed moisture trap.
Flush	Keep tape straight and flat so plaster, cladding or trim work is not affected. Press corners firmly. If plaster will cover the exterior side of vapor-control tape, waiting at least 24 hours is recommended.

DO NOT / COMMON RISK

Incorrect practices to avoid

DO NOT**Bond to an unprepared substrate**

Dust, oil, moisture or sandy substrate can significantly reduce adhesive strength.

DO NOT**Overstretch the tape**

Later shrinkage, edge lifting, cracking or corner opening may occur.

COMMON RISK**Insufficient overlap**

Tape overlaps are recommended to be not less than 50 mm.

COMMON RISK**Insufficient wall bonding width**

Effective wall-side bonding width is recommended to be not less than 50 mm.

DO NOT**Skip corner allowance**

Corner allowance is recommended to be not less than 1.5 times the frame-to-wall gap.

DO NOT**Reverse-lap exterior tape**

Exterior tape should follow shingle-lap drainage principles.

COMMON RISK**Leave fixing details unsealed**

Brackets, packers and support timber can become water and air leakage paths.

DO NOT**Leave tape unpressed**

All tape should be pressed firmly with a roller or scraper after bonding.

Protection and repair

Protect completed air-control and waterproof layers during follow-on work. If tape is damaged, scratched, contaminated, lifted or locally debonded, repair it promptly with at least 50 mm overlap on all sides and press firmly after application.

FIELD QA

Inspection checklist

Use this page as a print-ready site checklist after the detail is completed. For passive-house or high-airtightness projects, air leakage testing or a project-specific inspection is recommended.

☐	Interior waterproof vapor-control tape is continuous and closed.
☐	Exterior waterproof vapor-open tape is continuous and closed.
☐	No tape is damaged, contaminated, hollow, lifted or open.
☐	Tape overlaps are at least 50 mm where specified.
☐	Effective wall bonding width is at least 50 mm where specified.
☐	Corners are fully allowed, dressed and pressed.
☐	Brackets, packers, support timber and penetrations are reinforced.
☐	Sill forms an effective outward drainage path.
☐	Exterior lap direction follows shingle-lap principles.
☐	Pre-compressed expanding tape or joint insulation is continuous.
☐	Later plaster, facade, trim or flashing work will not damage the completed sealing layer.
☐	Tape edges are protected from exposure, contamination or mechanical damage where required.

Project / Area

Inspector

Date



Continuous, reliable, inspectable sealing

The core of window and door opening sealing is not simply sticking tape around the frame; it is establishing a continuous, reliable and inspectable connection system.

Interior waterproof vapor-control tape forms the airtight and vapor-control connection, reducing air leakage and limiting indoor moisture migration into the wall. Exterior waterproof vapor-open tape forms the weatherproof connection, blocking exterior rain and wind pressure while allowing the assembly to dry outward.

A correct detail should meet four objectives at the same time: continuous airtightness, reliable waterproofing, appropriate vapor openness and smooth drainage. The final installation method must be confirmed against project design, window or door system requirements and site substrate conditions.

01

Continuous Airtightness

Connect the interior control layer without gaps, loose edges or unpressed corners.

02

Reliable Waterproofing

Maintain exterior drainage, shingle-lapped continuity and reinforced fixing details.

03

Drying-Capable Vapor Strategy

Coordinate vapor-control and vapor-open sides so incidental moisture is not trapped.