

HIGH PERFORMANCE BUILDING

DOWSIL™ Membrane Façade System

Application guide

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An introduction to the DOWSIL™ Membrane Façade System

The DOWSIL™ Membrane Façade System provides weather and airtight seals in fenestration applications, ventilated façades and curtain wall applications and can also be used to seal across adjacent building elements.

The DOWSIL™ Membrane Façade System is a compatible suite of products consisting of DOWSIL™ Membrane and DOWSIL™ 300 Adhesive. DOWSIL™ Membranes are made from high quality EPDM raw materials from Dow, which have been designed for use as a water vapor control layer according to EN 13984. DOWSIL™ 300 Adhesive has been specifically developed for durable bonding of DOWSIL™ Membranes.

Gaps and connection joints in building façades have different requirements and are often complex in terms of their shape or particular needs. Special consideration should be given to requirements such as movement capability, adhesion, resistance to UV radiation and weathering, water vapor control and compatibility with various materials which will be in contact with the sealing solution.

DOWSIL™ Membrane Dual and DOWSIL™ Membrane Outside are available in a range of standard sizes which can be selected according to their thickness and their resulting s_d -value — the ability of a material to resist to the water vapor diffusion — as shown in Table 1. (s_d -value = water vapor resistance factor x thickness)



The DOWSIL™ Membrane Façade System range

		Thickness (mm)	Length (mm)	Width (mm)	Water vapor resistance factor (μ -value)	Water vapor diffusion equivalent air layer thickness (s_d value)
DOWSIL™ Membrane Dual	DOWSIL™ Membrane DUAL 0.6	0.6	25	100, 150, 200, 250, 300, 350, 1400	100.000	60m
	DOWSIL™ Membrane DUAL 1.0	1.0	25	100, 150, 200, 250, 300, 350, 1400	100.000	100m
	DOWSIL™ Membrane DUAL 1.2	1.2	25	100, 150, 200, 250, 300, 350, 1400	100.000	120m
DOWSIL™ Membrane Outside	DOWSIL™ Membrane OUTSIDE 0.6	0.6	25	100, 150, 200, 250, 300, 350, 1400	15.000	9m
DOWSIL™ 300 Adhesive	DOWSIL™ 300 Adhesive is a one component, elastic SMP Adhesive for DOWSIL™ Membrane installation. It is supplied in 600ml foil packs.					

Note: To learn more about technical performance and safety requirements of DOWSIL™ Membranes and DOWSIL™ 300 Adhesive please refer to the product data sheets and safety data sheets available on dow.com/construction.

Installation guidelines

Important:

- **DOWSIL™ Membranes must only be bonded using DOWSIL™ 300 Adhesive.**
- DOWSIL™ Membranes must be bonded to clean, dry, frost-free, dust-free substrates.
- Application temperature: +5°C to +40°C.
- Surfaces to be bonded must be visibly dry before the application process begins.
- Avoid use in contact with bituminous materials or substrates that release oil or plasticiser.

Consumption:

40-60ml/m → 10-15m (depending on surface characteristics, without wastage).

Preparation:

- Check that all components such as the selected DOWSIL™ Membranes and DOWSIL™ 300 Adhesive have been stored according to Dow's recommendations and are within shelf life.
- Field adhesion testing should be conducted to establish whether primer application will be required. Apply either DOWSIL™ Primer P for rough and porous substrates or DOWSIL™ 1200 OS Primer for non-porous and smooth surfaces and allow sufficient drying time.

Step-by-step instructions for use



1. Clean porous substrates with a wire brush

If DOWSIL™ Membrane installation takes place at the construction site, porous substrates should be prepared using abrasion, for example, with a wire brush, ideally followed by blasts of oil-free compressed air. Exterior surfaces must be visibly dry before applying DOWSIL™ 300 Adhesive.



2. Prime surrounding wall (if recommended by field testing)

Apply either DOWSIL™ Primer P for rough and porous substrates or DOWSIL™ 1200 OS Primer for non-porous and smooth surfaces and allow sufficient drying time.



3. Clean frame with a solvent wipe

Non-porous surfaces must be cleaned with a suitable solvent such as DOWSIL™ R-40 Universal Cleaner or DOWSIL™ R41 Cleaner Plus (according to the substrates to be cleaned) using the two-cloth cleaning method. This is typically required where membrane installation takes place in a factory environment.



4. Apply DOWSIL™ 300 Adhesive

Apply a bead of 10 mm width of DOWSIL™ 300 Adhesive to the substrate. Note: uneven surfaces may require a higher quantity of adhesive to even out the surface roughness.



5. Install DOWSIL™ Membrane

Press the DOWSIL™ Membrane into the adhesive to wet out both membrane and substrate surfaces within 10 minutes after adhesive application. Pre-installation of DOWSIL™ Membranes to the building element at factory site prior to shipping may reduce assembly cost at building site significantly.



6. Press DOWSIL™ Membrane with a roller tool

A roller can be used to apply consistent pressure to ensure uniform contact. Horizontal joints must be completed before application of vertical joints. Vertical joints shall overlap horizontal joints. Ensure tension free installation and avoid wrinkles in the DOWSIL™ Membrane.



7. Re-position DOWSIL™ Membrane as needed

DOWSIL™ Membrane may still be adjusted within 10 minutes after adhesive application.

Controlling moisture — Building physics considerations

Depending on the climatic boundary conditions and the various building elements, each interior and exterior joint may require a different solution.

The general recommendation for non air-conditioned buildings in a moderate climate (e.g. Central Europe) is to install a much tighter inner layer (DOWSIL™ Membrane Dual) than outer layer (DOWSIL™ Membrane Outside). The inner membrane acts as an airtight seal avoiding convectional heat loss, thus contributing to energy savings and at the same time avoiding water vapor diffusion. The outer diffusion open membrane provides weather protection and allows trapped moisture to dry out.

An alternative membrane configuration is recommended where condensation is anticipated during warmer weather due to reverse diffusion. For example, the local climate in the Middle East or the use of air conditioning in the summer results in warmer outdoor air, which can carry much more moisture than cooler air inside the building. This results in water vapor diffusing from outside to inside with a potential for condensation around the cooler interior membrane. In this situation it is recommended that DOWSIL™ Membrane Dual is installed inside and outside, thus preventing the penetration of water vapor within the building elements.

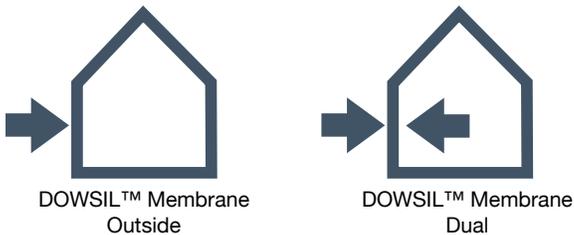
Quality control

Simple monitoring of all components such as the correct membrane(s) selection, the shelf life of the DOWSIL™ 300 Adhesive and adhesion to the substrates should be carried out prior to surface preparation, priming and installation.

DOWSIL™ Membrane

Check that the correct type of membrane has been delivered for the current project and at which position (inside, outside) it will be installed.

There is a recurrent print on the surface of each DOWSIL™ Membrane showing a membrane dedicated house symbol to assist with differentiation.



DOWSIL™ 300 Adhesive

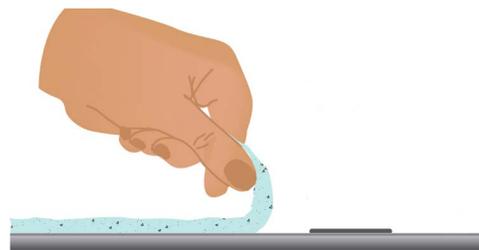
A check on the tack-free time is a simple method of confirming the quality of the adhesive. Extrude a small amount of DOWSIL™ 300 Adhesive onto the building substrate to be bonded. After 30-60 minutes, the adhesive skin should be fully cured and leave no visible marks when touched. Please contact Dow or their authorised distributor if full cure of the adhesive skin is not observed within the stated time frame. Do not proceed to the next step if full cure is not observed.



Adhesion to substrates and frames

Peel adhesion is a simple and effective test that verifies adhesion to a substrate. This test should be performed one (1) week in advance on three (3) samples of each substrate to which the DOWSIL™ 300 Adhesive will be applied.

- Properly clean and prime the test substrates.
- Apply a bead of DOWSIL™ 300 Adhesive and tool (using a spatula) to form a strip that is approximately 20 cm long, 15 mm wide and 6 mm thick.
- After one week of cure at 20°C and 50% RH, cut the first 4 cm of the adhesive bead parallel to the surface and pull at a 180° angle. Peel back 1-2cm of adhesive, leaving the remainder in place for additional testing. If the adhesive tears within itself, this is called 100% cohesive failure. If the adhesive releases from the substrate, the sample indicates 100% adhesive failure. A minimum of 70% cohesive failure shall be expected. If less than 70% cohesive failure is achieved, please consult Dow or their authorised distributor for advice.



For more information

Learn more about Dow's full range of High Performance Building solutions, including service and support, at [dow.com/construction](https://www.dow.com/construction).

Dow has sales offices, manufacturing sites, and science and technology laboratories around the globe. Find local contact information at [dow.com/contactus](https://www.dow.com/contactus).

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