



## Technical Memorandum DELTA®-VENT SA over OSB Wood Substrate

November 2019 Edition

DELTA®-VENT SA can be and has been applied successfully onto OSB as a substrate. OSB is listed on the Technical Data Sheet for DELTA®-VENT SA as an acceptable substrate.

As stated in the Technical Memorandum "Priming", dated November 2018, the peel adhesion of DELTA®-VENT SA to OSB was tested by Sageos/CCT Group Laboratories according to ASTM D3330 to meet AAMA 711-07 §5.3 90 § Peel Adhesion standard. The standard requires a minimum peel adhesion strength of 0.26 N/mm. DELTA®-VENT SA applied to OSB without primer was shown to have a peel adhesion of 0.30 N/mm, exceeding the minimum standard. This is a basis for allowing OSB as an acceptable substrate for DELTA®-VENT SA.



High profile projects have had DELTA®-VENT SA installed on them with OSB as the substrate. One of note is the Coach House project, a building owned by well-known building scientist and professor at the University of Waterloo, Dr. John Straube. OSB was the sheathing for the entire structure. There were no bubbles nor any adverse results. A similar project was completed in Martha's Vineyard. OSB was a primary substrate and excellent results were achieved.

Because it is known that DELTA®-VENT SA adheres well to OSB with or without primer, any post-application bubbling must be the result of a pressure drive greater than the known peel adhesion force. The most likely cause of the pressure drive is moisture in the substrate. It is more common on the sunny side of the building. The heat of the sun will increase the water vapor pressure, causing the moisture to come out of the substrate at a faster rate than it can diffuse through the membrane.

This can occur on a wide variety of substrates, depending on their moisture content, including exterior grade drywall, plywood, OSB and concrete (especially green concrete). A similar phenomenon will occur with fluid applied membranes (whether permeable or impermeable) on wet or high moisture-content substrates. In that case, the fluid applied membrane will develop many pinholes across the wall as water vapor



bubbles its way to the surface, compromising the integrity of the application, both in air-tightness and water penetration resistance. DELTA®-VENT SA is moisture vapor permeable (50 perms per ASTM E96 Method B). The water

vapor in the bubble areas will eventually diffuse through. This can be unsightly until the diffusion process is complete, but there is no ill effect on the performance of the DELTA®-VENT SA and the integrity of the membrane is not compromised.

The root cause of bubbles remains moisture in the substrate (sheathing). Moisture in sheathing will come from one or a combination of sources:

- Due to high relative humidity prior to installation of sheathing or prior to installation of membrane
- Due to precipitation while on site
- Retained from manufacturing process (will vary by manufacturer)
- Absorbed from excessive water-based surface preparation treatment (primer)
- Moisture remaining on substrate due to membrane application before primer is completely dried/cured.

#### Recommendations

When installing DELTA®-VENT SA, it is important to follow the Installation Instructions.

Test the substrate with a moisture meter prior to application of DELTA®-VENT SA (or similar membranes). If moisture levels are high, one should either use drier material or wait for existing material to dry to a more suitable moisture content

level. Follow the moisture content guidelines in the "Substrate Conditions and Preparation" section of the Installation Instructions:

All surfaces must be sound, dry, clean and free of dust, oil, grease, ice, dirt, excess mortar or other contaminants detrimental to the adhesion of the membrane.

- Wood substrates (including OSB) must meet USDA recommendations for dry lumber at the time of use (U.S.D.A. Forest Service "Moisture Content of Wood" research note FPL - 0226 1973 table 1).
- Precipitation in days immediately before installation will increase wood substrate moisture content. Allow sufficient time to dry prior to installation of membrane. Ensure moisture content of wood substrate is 12% or less.

Apply all surface preparation treatments or primers (i.e. DELTA®-HF PRIMER, DELTA®-ADHESIVE LVC, DELTA®-ADHESIVE) at the recommended rate. The purpose of the surface preparation treatment (priming) is to consolidate dust and other

debris that will inhibit intimate contact between the adhesive and the substrate. Using more than the recommended amount will not aid adhesion. Membrane should not be applied before the primer has fully dried/cured. For example, DELTA®-HF PRIMER should not be tacky when membrane applied; it should be completely dry to the touch. If the surface still feels tacky after the application of the primer, then it has not fully cured/dried.

If the surface is clean (dust-free and dirt-free) and dry (including ice-free) and ambient temperatures are 40oF (4oC) and above, priming the substrate may not be required when applying DELTA®-VENT SA. Test for acceptable adhesion before applying to the entire wall.

Intimate contact between the membrane adhesive and the substrate is very important. This is achieved through pressure from hand-rolling the membrane. Hand rolling is a key step to good adhesion.

