

Considerations for Vapour Retarder Adhesion on Concrete Roof Decks

Moisture in concrete roof decks continues to be an issue for the roofing industry. The most common approach to mitigating the impact of moisture from a concrete deck on roofing assemblies is to install a vapour retarder. Whether the deck is newly poured or existing, some level of moisture will likely be present in the concrete. Left unaddressed, moisture in concrete can adversely affect the performance of the adhered vapour retarder. There is presently no understanding of a defined level of moisture content that is acceptable for adhered vapour retarder installation, and even if there were, there is no reliable and consistent test for measuring moisture levels in concrete roof decks.

There are attempts to address the moisture issue of new concrete pours with admixtures, either integrated into the mix or added to the surface. We have not seen data to suggest either works for exposed concrete slabs. Adding a sealer to the surface of the concrete can negatively impact the adhesion of the vapour retarder, and it changes the configuration of the tested assembly, which may not be approved by the code official or insurance field engineer.

When installing an adhered vapour retarder over a concrete deck, the following points should be considered:

Consistent with good roofing practice the roofing contractor should perform successful field adhesion tests prior to the actual application.

Vapour retarder installation may be one of the following:

1. Vapour Retarder SA 31 or Vapour Retarder SA 106 Self Adhered
2. Vapour Retarder TA 138 torch applied

Procedure:

- Install a 2 ft. x 2-1/2 ft. piece of the vapour retarder according to the Sika Canada. - Roofing instructions in a 2 ft. x 2 ft. area. (Leave 6 in. of the vapour retarder unattached for pulling).
- Samples self adhered, or torch applied must be left in place until at least the next day.

- To perform the pull test cut a 3 in. strip in the center of the vapour retarder in the long direction.
- Using the 6 in. of unadhered vapour retarder as a pull tab, pull the vapour retarder at a 180° angle from the substrate.
- This is a qualitative test. The adhesion is considered acceptable when the adhesive fails cohesively (adhesive remains on both the vapour retarder and the concrete) or the vapour retarder separates completely from the adhesive (all of the adhesive remains on the concrete).
- If the adhesive comes off of the concrete, allow additional drying time of the concrete and perform a new test.
- Perform a minimum of 1 test per 10,000 sf. Areas with different pour dates should be considered separate areas before determining the minimum number of tests to perform.

Vapour Retarders as Temporary Roofs

Ideally, an insulated roof system should be installed immediately after vapour retarder installation. Reducing the temperature gradient below and above the membrane can help mitigate vapour drive.

Vapour drive can jeopardize the vapour retarder installation and it usually occurs when there is a drastic imbalance in temperature above and below the vapour retarder, primarily warm below, cold above. It can also occur in hot, sunny conditions where the concrete directly below the vapour retarder becomes heated forcing the water vapour to migrate upwards causing air pockets or 'blisters' under the vapour retarder. This can be problematic for temporary roofs.

Temporary roofs, i.e. vapour retarders that have been left exposed for an extended period, must be inspected by a Sika Canada – Roofing Technical Service Representative for adhesion and damage prior to the application of the roof system. Areas of poor adhesion or damage must be removed and replaced.

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