



**TITLE:** Black Staining and Flow from Self-Adhesive, Bituminous-Based Wall Flashings

**DESIGNATION:** IIBEC-TA-011-2016

**OBJECTIVE:** To provide commentary and to raise awareness of potential staining and flow of oils from self-adhesive, bituminous-based wall flashings.

## A. BACKGROUND

- Self-adhesive (a.k.a. “peel-and-stick”) bituminous-based sheet materials have been used as roofing underlayments and waterproofing membranes in North America since the late 1960s. The sheet materials are composed of a carrier, protective top sheet or surfacing, a butyl or bituminous-based waterproofing base layer, and a release sheet. The release sheet that prevents the sheet from bonding to itself is peeled away to expose the adhesive surface of the waterproofing base layer, most commonly just prior to application.
- The adhesive waterproofing base layer is composed of proprietary blends of rubberized asphalt, with the modifier being styrene-butadiene-styrene (SBS), which enhances the bitumen’s elastomeric properties. In many cases, the bitumen is produced with a lower softening point than in roofing- and waterproofing-grade products. This creates a product that is flexible with an ability to conform to substrate configurations. The softening characteristics help to seal around penetrations through the sheet, such as fasteners.
- Self-adhesive, bituminous-based sheet materials have more recently been used as a flashing material, underlayment, and transition membrane, and as water-resistive barriers in exterior wall assemblies.
- Other self-adhesive sheet materials used as wall flashings are composed of butyl rubber or other types of non-bituminous adhesives. Staining and flow from these nonbituminous sheet materials have not been reported and are, therefore, beyond the scope of this Technical Advisory.

## B. DISCUSSION, INCLUDING LIMITATIONS

- Black stains on underlying construction materials are caused by the transfer of the light oils from the bituminous material to the adjoining substrate. This can also occur when the material is subjected to temperatures exceeding the softening point of the rubberized asphalt.
- Sealants and flexible PVC materials are known to degrade oils in the asphalt and may cause black stains to occur if there is contact with the rubberized asphalt component of the flashing. The bituminous-based component of the self-adhesive sheets can also cause plasticizer migration in PVC sheet materials, causing the PVC sheet to become embrittled.

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- In addition to the occurrence of stains, the adhesive quality of sealant can also be affected when in contact with the bituminous compound.
- Black stains can be unsightly. Bituminous stains can be difficult to remove from porous building materials such as cut natural stone and masonry.
- Flow of the rubberized asphalt can potentially compromise the integrity of the installed sheet material.

## C. RECOMMENDATIONS

It is recommended that designers and specifiers incorporating self-adhesive, bituminous-based materials within vertical wall assemblies should consider the following:

- Provide the proper bituminous-based, self-adhesive material for the intended use. Sheets manufactured for use in plaza deck or below-grade waterproofing applications have lower bitumen softening temperatures. These membranes are generally not intended to be used within the vertical wall assembly. Other sheets have higher softening points and are intended to be used where high in-service temperatures are expected.
- Terminate bituminous-based, self-adhesive, through-wall flashing approximately ¼ inch from the exterior face of the wall or veneer. Bituminous-based, self-adhesive flashing materials should never be exposed to daylight in service.
- Do not leave bituminous-based, self-adhesive materials exposed longer than recommended by the manufacturer during construction.
- Verify that the bituminous-based, self-adhesive material will not be subject to service or installation temperatures beyond the manufacturer's recommendations. High-temperature-grade materials should be used where required.
- Do not adhere the bituminous component of the self-adhesive material to sealants, flexible PVC materials, urethanes, or other types of plastics without verifying compatibility with all of the effective products.
- Verify compatibility and staining potential of both the top protective film and bituminous-based adhesive with all proposed sealants.
- Perform adhesion tests of sealants that may come in contact with the self-adhesive sheet material.
- Be aware that service temperatures include the actual dry bulb temperature, as well as elevated temperatures due to solar heat gain, reflected heat, and other heat sources such as installation behind dark-colored or metal panels. These influences may expose the specific in-service placement of these materials to temperatures that are higher than the manufacturer's published anticipated dry bulb temperature for the locality of use.
- Follow the manufacturer's installation instructions, including the use of the manufacturer's recommended primers, surface conditioners, and water cut-off mastics at lap seams and terminations, which may help to reduce staining potential.

## D. INDUSTRY STANDARDS AND REFERENCES

Grace Technical Letter #1, "Chemical Compatibility of Perm-A-Barrier Self-Adhered Membranes With Other Materials."

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Figure 1 – Black flow from self-adhesive, bituminous-based flashing.



Figure 2 – Embrittlement of thermoplastic membrane from self-adhesive, bituminous-based flashing.