

## Use of Self-Adhering Membranes as Underlayments in Steep Slope Roofing

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Self-adhering bituminous membranes have been used as underlayments in steep slope (greater than 2:12) roofing for many years. When applied as an underlayment, they are primarily used to help prevent water entry from ice dams at the eave areas of shingled roofs in cold climates. When used as ice dam protection, the underlayment is typically installed directly to the deck surface from the eave's edge to a point at least 24 inches (measured horizontally) inside the exterior wall line of the building prior to application of the shingles. If the membrane is not wide enough to reach that point, install additional course(s) of membrane as needed, overlapping the previous course by 2 inches or as specified by the manufacturer. Self-adhering bituminous membranes are required by building codes to meet the requirements of ASTM D1970, and newer codes require these products to have a label indicating compliance with ASTM D1970. Always check local building codes to confirm eaves protection requirements. The adhesive asphalt component effectively seals the membrane to itself and seals around the shanks of nails used in the overlying shingles so that any water forced underneath the shingle layers by wind or ice dams does not reach the deck or attic space below. These self-adhering underlayment membranes have also been used successfully in other "critical" roof situations, such as part of a flashing system in valleys or around roof penetrations (skylights, vent stacks, etc.), and are commonly applied to the entire deck beneath roofing materials on lower-sloped (2:12 to 4:12) roofs.

Where the roof area of one slope transitions to a roof area of a differing slope, the underlayment application should extend at least 24 inches up on the steeper slope roof. The transition area between the steeper slope and lower slope needs special attention due to potential water buildup.

In certain applications, such as lower-sloped (2:12 to 4:12) roofs or in areas where high winds or hurricanes are prevalent, homeowners and roofing contractors may apply the underlayment membrane over the entire roof area, not just the first few feet at the eaves. This application improves roof protection in the event that water gets under the shingles. Check local codes to confirm that a self-adhering bituminous membrane is acceptable for full-roof application.

When installed, self-adhering membranes restrict the flow of vapor and air through the roof assembly, and moist air entering the attic from the conditioned space inside the home may condense on the underside of the self-adhering membrane at the roof deck joints.

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Condensation may lead to problems in roofing systems or attics, including but not limited to wood deck swelling, deterioration, mold growth, and staining on the interior ceilings below the attic. Potential condensation problems may be reduced by:

1. Confirming attic ventilation is adequate, balanced, and evenly distributed to assure proper airflow.
2. Installing a proper vapor retarder on the warm side of the attic floor, which can reduce intrusion of warm, moist air into the attic space.
3. Installing sufficient insulation that covers the entire attic floor.
4. Checking local energy codes for appropriate ceiling insulation R-values and air barrier requirements.

For more details on ventilation, see ARMA's Technical Bulletins "Considerations in Attic Ventilation System Selection" and "Why Ventilation Is Important." Check with a building design professional for advice if the home is in a warm, humid climate, as a different approach may be necessary. Following the four recommendations described above is sound practice for all steep-slope roofing systems. If your roofing application calls for applying a self-adhering underlayment or membrane over the entire roof deck, these good practices will help reduce condensation and the subsequent problems that can occur.

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