

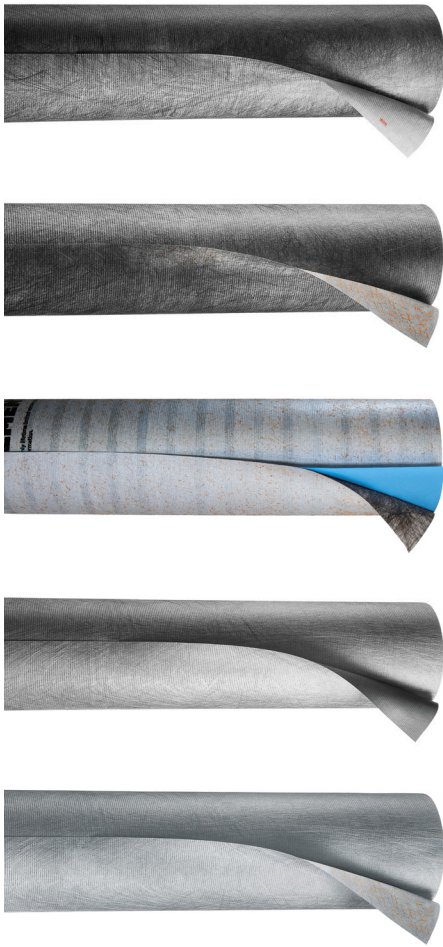


March 2025 | White Paper

SURFACTANTS AND THEIR IMPACT ON BUILDING WRAP PERFORMANCE



Figure 1. TYPAR's complete lineup of building wraps provides surfactant resistance for any type of project.



Surfactants and Their Impact on Building Wrap Performance

Introduction

When evaluating weather-resistive barriers (also known as WRBs), builders and homeowners look for a product that has the optimal balance of properties—bulk air and water resistance, durability, and sufficient moisture vapor permeability. A balance of these four properties is crucial in helping to maintain the protection, comfort, and efficiency of a home, and the WRB is ultimately the last line of defense for protecting the home from the elements. However, there is a fifth property—surfactant resistance—that is commonly overlooked by building professionals. Builders and contractors who do not have at least a basic understanding of surfactants and how they impact the performance of a building wrap could potentially jeopardize the long-term durability of the exterior wall assembly. This white paper aims to provide a crash course on the following: 1) defining what is a surfactant, 2) understanding the problems with surfactants, and 3) outlining solutions to provide surfactant resistance and ultimately peace of mind to builders and homeowners.

What is a Surfactant?

Surfactants (surface active agents) are contaminants that lower the surface tension of a liquid, allowing it to penetrate deeper into the housewrap material. Water soluble extractives in wood, such as tannins and wood sugars in redwood and cedar, are examples of surfactants that contaminate the surface of building wraps. In addition, surfactants can be found in detergents, soaps, and other cleaning solutions used to power wash siding, making surfactants almost impossible to avoid. Water that manages to get into a building system carries these surfactants and allows them to penetrate deeper into the walls and with that brings greater opportunities for molding, rotting, and potentially decreased comfort on the inside of the home.

What is the Problem with Surfactants?

Surfactants promote the loss of water repellency, causing "wetting" of the building wrap surface. Once this occurs, water can more easily pass through the microscopic openings in the building wrap. When moisture finds its way into the building envelope, it can threaten a building's structural integrity, causing exterior surfaces to deteriorate. Bulk moisture intrusion can also support mold and rot that not only cause structural damage, but also pose serious health hazards to building occupants. It's important to note that some building wraps perform better against these chemicals than others. Proper installation can help address any surfactant concerns—for example, back-priming potentially troublesome wood siding with a water-repellent primer is a good best practice.

Are There Solutions to Address Surfactants?

When choosing a building wrap, be sure to pay attention to its surfactant-resistance capabilities. Not all wraps will provide the same surfactant protection—if any at all. On the other end of the spectrum are building wraps like TYPAR® BuildingWrap™ Commercial building wrap, DrainableWrap™ DrainableWrap™ Commercial and our newest self-adhered WRB, TYPAR® DrainableWrap™ Peel and Stick, that are engineered with a specialized coating that resists surfactants. In fact, third-party testing commissioned by The American Society of Heating,

Figure 2. After being exposed to surfactants and subjected to a weathering machine for two days, TYPAR® (top) did not show any damage before or after a scratch test, while Tyvek® (middle) and Everbilt® (bottom) both became brittle.

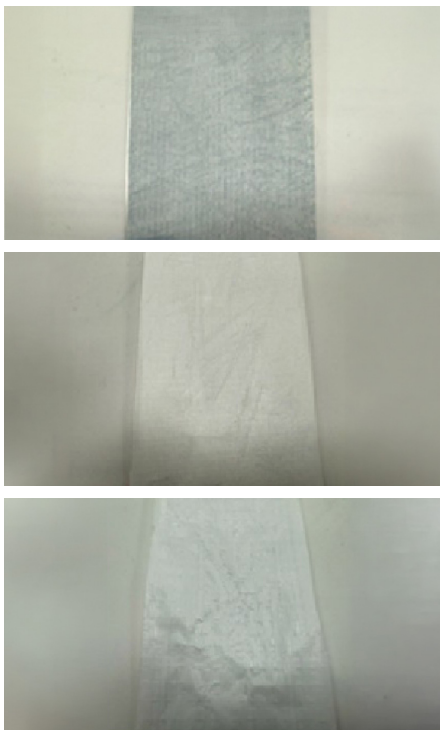
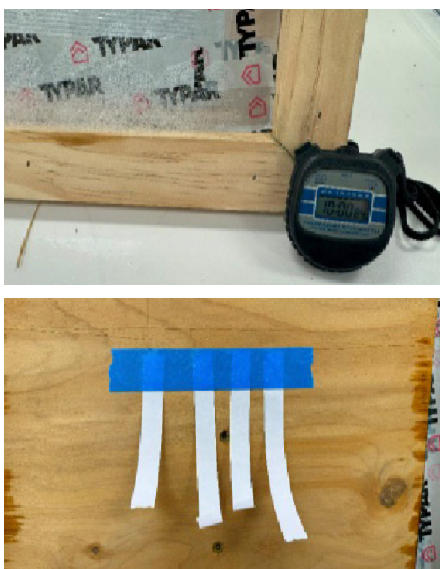


Figure 3. Leak detection paper was placed between TYPAR BuildingWrap and a sheet of plywood, then sprayed with a soap and water solution. After 10 minutes of exposure to the surfactant solution, the test paper remained dry, demonstrating TYPAR's superior ability to withstand moisture intrusion with surfactant exposure.



Refrigerating and Air-Conditioning Engineers (ASHRAE) showed that TYPAR® resisted a power wash solution, while Tyvek® HomeWrap® failed, permitting numerous droplets to form and wetting the underlying OSB.

More recently, however, TYPAR completed additional third-party testing exploring surfactant resistance across leading WRBs in the industry. Conducted in June 2023 by an accredited third-party testing facility with ISO 17025, Miami-Dade, AAMA, and AABA certifications, the testing compared TYPAR® BuildingWrap™ to Tyvek and Everbilt® weather-resistant barriers when subjected to a common surfactant (dish soap and water). TYPAR outperformed both competitors across the board.

In the recent study commissioned by TYPAR, there were two different surfactant tests completed:

Test #1: UV & Weather Exposure

The first test subjected the surfactant-treated weather barriers to a weathering machine at a temperature of 75°F for 48 hours, exposing them to heat and UV light. After 48 hours, both the Tyvek and Everbilt samples were brittle, although Tyvek only showed damage after a scratch test was conducted. TYPAR did not show any damage before or after the scratch test.

Test #2: Moisture Exposure

For the second test, all three weather-resistant barriers were installed on a mock-up wall with leak detection paper installed behind them. The surfactant was sprayed onto the sample and allowed to sit for 10 minutes. After 10 minutes, each WRB was cut to expose the leak detection paper.

- The paper behind Tyvek had slight indications of changing from white to pink, indicating moisture.
- The paper behind Everbilt had several pink areas, indicating moisture intrusion.
- The paper behind TYPAR was dry, showing no evidence of moisture.

Although it is never advisable to expose WRBs to surfactants, most will be exposed despite best intentions. So, builders and contractors need to select a wrap that is surfactant-resistant. Due to the vast amount of building wraps and moisture management products on the market, it is more imperative than ever to make the right product selections to design and build wall systems that perform to today's high performance, durability, and moisture control standards.

So remember, pick a weather-resistant barrier that has the balance of all properties—bulk air and water holdout, durability, optimal permeability, and surfactant resistance. You need all five for ultimate protection and peace of mind! Visit [TYPAR.com](https://www.ty-par.com) to see the full TYPAR® weatherization lineup, including our full portfolio of building wraps, flashings, tapes, sealant, and accessories.

FOR MORE INFO, VISIT [TYPAR.COM](https://www.typar.com).



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