

DuPont™ Tyvek® Building Wraps vs. Zip System® Wall Sheathing

Count on DuPont to help you build more durable, energy efficient homes.

Building walls that help manage water is the first critical step to building durable, energy efficient structures. It's virtually impossible, and prohibitively expensive, to build a perfect wall system. So, it is essential to limit the amount of air and water that can enter while increasing the drying rate of the wall assembly. That's why choosing the best available weatherization system is key to a building's durability.

DuPont™ Tyvek® building wraps give you the job-site durability, performance and ease of use needed to help you build more comfortable, longer-lasting and energy-efficient structures. Trusted by building professionals everywhere, DuPont™ Tyvek® building wraps, part of the complete DuPont Building Envelope Solutions portfolio, provide superior performance compared to ZIP System® wall sheathing (wood-based sheathing with a water-resistive overlay) as further described in this document.

ZIP System® Wall Sheathing requires reverse shingling which can direct water into the wall system

Contrary to accepted building science, the ZIP System® wall sheathing's published installation details result in reverse shingling at heads of windows, doors and other penetrations. This conflicts with Section R703.8 of the 2006, 2009 and 2012 International Residential Code (IRC) and with major window manufacturers' installation details that require flashing to be applied shingle-fashion to prevent water from entering the wall cavity. With Tyvek®, when properly installed, positive shingling is built right into the system to direct any water that gets behind the cladding away and out of the structure.

A little rain won't slow you down

ZIP System® panels and tape can only be installed in dry conditions and on dry surfaces, as directed in the ZIP System® Installation Manual. This can lead to scheduling delays and added costs if weather doesn't cooperate. DuPont™ Tyvek® Weatherization Systems can be installed under most weather conditions.

Less taping and fewer fasteners for more continuous protection

DuPont™ Tyvek® Weatherization Systems can be installed under most weather conditions with as few as 4 fasteners per square yard and the underlying conventional sheathing materials can be installed more quickly because every seam and corner does not have to be taped and rolled.

In comparison, the ZIP System® installation manual requires **52 fasteners for each 4' x 8' piece of ZIP System® Wall Sheathing**, each of which must puncture the WRB overlay without compromising it. Overdriven fasteners can damage the overlay, creating additional opportunities for water to enter the ZIP System®. Plus, the performance of ZIP System® Wall Sheathing as an air and water barrier is dependent on the performance of the taped seams.

Published ZIP System® installation guidelines require that all sheathing seams and corners must be taped—with no wrinkles in the applied tape. Proper tape installation can be time-consuming, and complicated and is crucial to the water and air resistance of the system.

ZIP System® wall panels are also vulnerable to water intrusion because the taped seams of the WRB and the butt joints of the sheathing panels are completely aligned. Any failure in the taped seam creates an opportunity for water to move directly into the wall cavity. With DuPont™ Tyvek® building wraps, when installed per DuPont installation guidelines, the seams of the wrap are properly shingled, directing water away from the sheathing even if a taped seam were to fail.

Tear-Resistant Tyvek® Building Wraps Stand up to tough conditions

DuPont™ Tyvek® building wraps are made from a strong, nonwoven material that resists tearing and puncturing, and easily withstands demanding job-site conditions. If DuPont™ Tyvek® building wraps do get punctured or torn during construction, smaller punctures or tears can be repaired quickly with DuPont™ Tyvek Tape®. Larger tears or holes can simply be patched with a slightly larger piece of the same DuPont™ Tyvek® product secured along all edges with DuPont™ Tyvek® Tape as illustrated in DuPont™ Tyvek® WRB installation guidelines.

ZIP System® Panels require protected storage and must be handled with care

ZIP System® wall sheathing consists of an oriented strand board (OSB) structural panel with a resin-impregnated Kraft paper overlay. As a result, care must be taken to protect the ZIP System® wall sheathing from moisture prior to installation. When the WRB overlay of the ZIP System® is damaged, the underlying water-sensitive sheathing material is also affected.

Storage instructions in the ZIP System® installation manual require that the ZIP System® panel bundles be stored off of the ground and **“covered loosely with a waterproof protective material”**. The manufacturer recommends these covers be anchored on top of the stack but away from the sides and bottom to allow for adequate air circulation. When high moisture conditions exist, the manufacturer also recommends cutting the stack binding to prevent further damage to the swollen panels. Failure to take these precautions could result in damage to the panel.

Tyvek® Building Wraps deliver superior water resistance

DuPont™ Tyvek® building wraps are comprised of a precisely bonded, continuous filament barrier, that provides high bulk water hold-out and breathability. When integrated into a properly flashed wall system, DuPont™ Tyvek® building wraps help to guide water out of the wall and promote rapid drying.

The bulk water hold-out capability of ZIP System® wall sheathing depends on the taping of all joints and corners. Improper taping can allow water to enter the system, reducing the performance and durability of both the WRB and the entire wall system.

Tyvek® Building Wraps promote faster drying

To be considered vapor permeable, a WRB must have a vapor permeance of at least 5 perms (IRC), as tested per ASTM E96 B (desiccant method). Materials with a vapor permeance below these required levels significantly decrease the wall system's ability to dry. DuPont™ Tyvek® building wraps have permeability ratings ranging from 28 to 56 perms giving the wall system better drying capability.

The manufacturer of the ZIP System® claims vapor permeability of 12-16 perms for the WRB overlay only. However third-party laboratory testing of the vapor permeability of ZIP System® wall sheathing with the bonded WRB overlay shows that it has vapor permeability of less than 1 perm, under both wet and dry cup measurement conditions. As a result, **ZIP System® wall sheathing may contribute to trapping moisture in the wall system**. Because ZIP System® wall sheathing requires all seams to be sealed with tape, installed ZIP System® wall sheathing constitutes an exterior vapor barrier. An exterior vapor barrier significantly reduces drying capability of the wall when moisture enters the system. Because it is also non-insulated, it can also lead to condensation from air exfiltration or vapor diffusion in the wall during cold weather.

Conclusion

DuPont™ Tyvek® building wraps are highly tear- and UV-resistant products that can be installed easier than the ZIP System®. DuPont™ Tyvek® weatherization products provide property owners and management groups with a system that is highly resistant to bulk water and air infiltration while allowing excellent wall system drying. The use of DuPont™ Tyvek® building wraps with today's wide array of cladding and sheathing options results in a more durable and forgiving wall system when compared to current WRB-laminated wood sheathing products.



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