Drainage Efficiency of DuPont™ Tyvek® HomeWrap® and DuPont™ Tyvek® CommercialWrap®

Importance of Water Management in Walls

Moisture is the number one cause of exterior wall damage. As a result, one of the most important jobs of a building wrap is to protect the home or building structure from water intrusion. Designing for drainage behind exterior cladding is widely accepted as one of the most effective measures for reducing moisture damage due to rain penetration and is a critical component in allowing the building wraps to work effectively. DuPont™ Tyvek® Water-Resistive and Air Barriers (WRB's) can improve a building's overall durability by protecting against damaging wind and rain that can penetrate the exterior cladding.

DuPont has building wrap products specifically designed to help increase the drainage efficiency of the wall: DuPont™ Tyvek® DrainWrap™, DuPont™ Tyvek® StuccoWrap® and DuPont™ Tyvek® CommercialWrap® D. The vertically-grooved surface of these products helps provide added protection against water by enhancing drainage away from the wall assembly. This is particularly important in areas subject to extreme wind-driven rain conditions. In short, these moisture barriers combine the superior air and water resistance, vapor permeability, and strength of Tyvek® with a vertically grooved surface that helps channel water safely to the outside. All DuPont™ Tyvek® creped building wraps have a drainage efficiency of 98% or greater per ASTM E2273.

What is ASTM E2273?

The industry standard that evaluates a wall assembly's drainage efficiency is ASTM E2273: *Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*. For this evaluation, a 4 ft. by 8 ft. wall with DuPont™ Tyvek® HomeWrap® was built and tested for drainage efficiency. During the ASTM E2273 procedure, a transparent plastic spray box with two spray nozzles allowing for water application through a slot is sealed to the wall. This spray box had a pressure regulator, flow meter and an inline water filter to the spray nozzles to control the flow rate of water sprayed into the slot. Water is sprayed onto the wall for 75 minutes total, and the amount collected is measured at 15-minute intervals. The total amount of collected water that has drained from the wall assembly is measured 60 minutes after the water spray is completed. Section R703.9.2 of the 2018 International Residential Code (IRC) and Section 1407.4.1 of the 2018 International Building Code (IBC) both require the wall to have an average minimum drainage efficiency of 90 percent when tested in accordance with ASTM E2273.

DuPont recently tested the drainage efficiency of Tyvek® HomeWrap® at a third party and determined Tyvek® HomeWrap® has a drainage efficiency of greater than 90%. This result is an important consideration for those that may prefer to use Tyvek® HomeWrap® or Tyvek® CommercialWrap® behind EIFS and stucco – both of which meet the criteria many architects and builders require.

The Wall Assembly with DuPont™ Tyvek® HomeWrap® Tested per ASTM E2273 Exhibited a Drainage Efficiency of >90%.

The summary chart below shows the DuPont™ Tyvek® Water-Resistive and Air Barriers that meet the code minimum called out in both the 2018 International Residential Code and 2018 International Building Code.

DuPont WRB	ASTM E2273 Results	Meets 2018 IRC / IBC Minimum of 90%
DuPont™ Tyvek® HomeWrap®	>90%	✓
DuPont™ Tyvek® CommercialWrap®		✓
DuPont™ Tyvek® DrainWrap™	>98%	✓
DuPont™ Tyvek® StuccoWrap®		✓
DuPont™ Tyvek® CommercialWrap® D		✓

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43-D100940-enNA-0622 CDP