

# DuPont™ Tyvek® StuccoWrap®

**Better drainage means stronger stucco.**



With a specially engineered surface texture designed for traditional and synthetic stucco systems in both commercial and residential construction, DuPont™ Tyvek® StuccoWrap® helps reduce cracking, improve stucco curing and channel moisture out of the wall. Over 40 years ago, DuPont invented the house wrap category with the introduction of DuPont™ Tyvek® HomeWrap®. Recognizing that stucco facades have unique water-resistive barrier needs, DuPont introduced DuPont™ Tyvek® StuccoWrap® in 1998, immediately helping builders to create better-performing wall systems for stucco construction.



### **Better curing, better results**

Shrinkage and structural cracks are the two most common types of cracks that occur in stucco.

Shrinkage cracks occur during curing and drying of new stucco. Shrinkage cracks can occur in the scratch or brown coats and may be covered by the final stucco coat, but they can still contribute to poor performance of the stucco system. Cracks and separation from the metal lath due to high scratch coat shrinkage cause increased porosity and decreased water resistance of the stucco (Webber 1997). Furthermore, these cracks may be weak spots that could lead to structural cracking in the future.

Structural cracks are caused when stresses to the stucco, from wind loading, impact, seismic activity, or vibrations, exceed the tensile strength of the stucco layer (Bucholz 1979; PCASC 1999). Excessive cracking can be both an aesthetic and functional (water resistance) problem. Unlike building paper, DuPont™ Tyvek® StuccoWrap® is non-absorptive. It does not absorb water out of the curing stucco.

Tensile strength, which is required to resist shrinkage and lessen cracking, is developed rapidly during the early stages of curing when moisture is available (Melander 1996). Premature dehydration of stucco during curing has been shown to have negative effects on stucco tensile strength. In tests on traditional 3-coat systems, stucco cured on DuPont™ Tyvek® StuccoWrap® as the intervening layer had up to 30% more flexural strength than stucco cured on 60-minute building paper. Less cracking means better structural integrity and resistance to water penetrating the facade. Ideally, each stucco layer should dry at a similar rate front to back. DuPont™ Tyvek® StuccoWrap® helps control moisture distribution in the mix during the critical early hardening, enhancing the curing process and resulting in stronger stucco.

#### Visual Cracking Observations in Three Coat Stucco Walls

Intervening Layer	Number of cracks observed
Grade D Paper	15
DuPont™ Tyvek® HomeWrap®	6
DuPont™ Tyvek® StuccoWrap®	0

Results from E331 Water Resistance Testing

#### Outstanding protection after curing, better choice than Grade D paper

Cracking not only occurs during stucco curing, but also over time during expansion and contraction of sheathing or wood studs. These cracks can allow moisture to get behind stucco, potentially causing mold, and damage to wall components. When used as the intervening layer in a two layer water-resistant barrier system<sup>1</sup>, DuPont™ Tyvek® StuccoWrap® provides the benefit of superior moisture management. By helping to seal the building envelope, Tyvek® StuccoWrap® helps protect buildings against bulk water intrusion and air-transported moisture, two factors that can lead to mold and wood damage if water accumulates in the wall cavity.

Tyvek® StuccoWrap® has a water hold out of 210 cm when measured by the hydrostatic head test (AATCC-127) while Grade D building paper absorbs water. All this adds up to more durable and energy efficient stucco coated buildings.

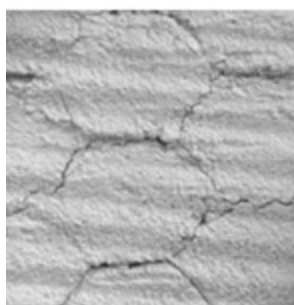
Stucco Mix 1  
Tyvek® StuccoWrap®



Stucco Mix 2  
Tyvek® StuccoWrap®



Stucco Mix 1  
Building Paper



Stucco Mix 2  
Building Paper



Stucco Mix #1 is "Dirty Sand", Stucco Mix #2 is "Clean Sand"  
Scratch coat cracking as a function of intervening layer

#### Breathability Helps Improve Indoor Air Quality and Reduce Energy Costs

The physical structure of DuPont™ Tyvek® StuccoWrap® contains microscopic pores that are large enough to allow moisture vapor molecules to escape the wall cavity yet are small enough that the much larger bulk water molecules cannot penetrate the building envelope. This vapor permeability is critical to the effective drying of the wall, while also providing excellent resistance to air penetration. Grade D building paper is 10x less permeable than Tyvek®, with a rating of only 5 perms when measured for vapor transmission (ASTM E96), as compared to Tyvek® StuccoWrap® which has a rating of 50 perms. This breathability allows any moisture that does get into the wall system to evaporate during drying.

This optimal balance of air and bulk water hold out and vapor permeability promotes better drying in wall systems. DuPont™ Tyvek® StuccoWrap® provides superior water drainage, combats moisture accumulation and helps prevent air infiltration and exfiltration – helping to protect the installed R-value of insulation for more comfortable, energy efficient homes and buildings.

<sup>1</sup>Water Resistant Barrier requirements under stucco may vary by jurisdiction. For more information, consult your local code official.

### Easy Installation

Because Tyvek® StuccoWrap® is pliable, it wraps around corners, interfaces at joints, penetrations and over architectural elements. In addition, it is lighter in weight than Grade D building paper, making it easier to handle and faster to install.

### Choose DuPont™ Tyvek® StuccoWrap®

For more than 40 years, DuPont building knowledge and material science has led to a broad portfolio of weatherization solutions that have helped make structures more energy-efficient and durable. Designed to meet the unique needs of stucco facades, DuPont™ Tyvek® StuccoWrap® has a specially engineered creped surface that helps to better manage water during and after curing, promoting a stronger stucco facade.

### Proper water barrier installation behind stucco

DuPont™ Tyvek® Weatherization Systems are recognized as water-resistive barriers in ICC-ES Evaluation Report ESR-2375 and have been used successfully in traditional 3-coat stucco for many years. The application of DuPont™ Tyvek® water-resistive barriers is governed by the code adopted and enforced by the local jurisdiction. When stucco is installed over wood-based sheathing, the 2012 International Building Code (Section 2510.6) and the 2012 International Residential Code (Section R703.6.3) require “a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper” or a layer of water-resistive barrier with a water resistance equal to or greater than that of 60-minute Grade D paper which is separated from the stucco by an “intervening, substantially non-water-absorbing layer”.

In jurisdictions that require two layers over wood-based sheathing, DuPont™ Tyvek® water-resistive barriers should be separated from the stucco by a second layer of DuPont™ Tyvek® water-resistive barrier. The use of DuPont™ Tyvek® StuccoWrap® as the second layer in combination with DuPont™ Tyvek® HomeWrap® as the first layer is the ultimate system, providing the benefits of superior water and moisture management, air barrier functionality, and reduced cracking of the stucco scratch coat. The first layer (directly over sheathing or studs) is configured to form a continuous drainage plane and is integrated with the flashing. The second layer (intervening layer) serves to separate and protect the inner layer from the stucco and allows a space between the two layers to improve drainage.



The primary benefit of using two layers of water-resistive barrier can only be realized if the method and manner of the installation establishes a continuous drainage plane, separated from the stucco. In a two-layer system, each layer provides a separate and distinct function. The primary functions of the inboard layer are to resist air and water penetration into the building cavity. This interior layer should be integrated with window and door flashings, the weep screed at the bottom of the wall, and any through flashings or expansion joints. The inner layer becomes the drainage plane for any incidental water that gets through the outer layer or at one of the joints or openings where the outer layer is damaged. The primary function of the outboard layer (intervening layer that comes in contact with the stucco) is to separate the stucco from the water-resistive barrier. Any flashing intended to drain to the water-resistive barrier is directed between the layers.

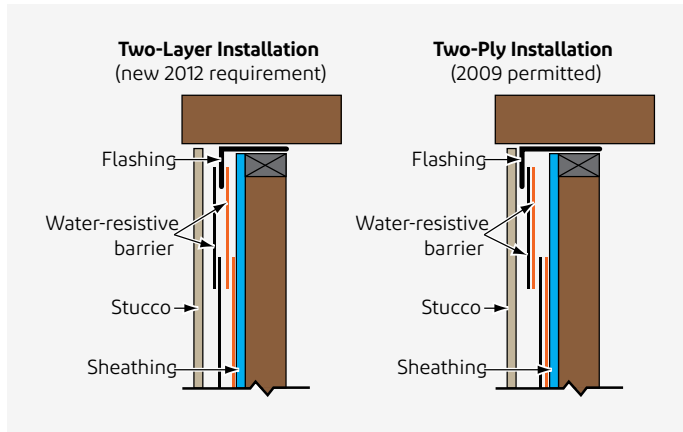
DuPont™ Tyvek® StuccoWrap®, DuPont™ Flashing Systems and other DuPont Weatherization Products provide integrated air and water and management solutions that help meet or exceed building and energy code requirements without sacrificing building durability.

### Two-Layer System

- Each layer of water-resistive barrier is individually installed in a ship lapped fashion
- Interior layer forms continuous drainage plane and integrated with flashing

### Two-Ply System

- Both layers of water-resistive barrier installed and lapped together
- Exterior layer integrated with flashing



### DuPont™ Tyvek® Specialist Network

A national group of highly-trained field representatives is available to assist you with your DuPont weatherization product choices and installations. From the latest updates on building codes, to keeping up with current trends and challenges, your local DuPont™ Tyvek® Specialist can provide on-site consulting and training on DuPont weatherization products to help make sure you get the job done right.

### DuPont™ Tyvek® Certified Installer

The DuPont™ Tyvek® Certified Installer program is one more way to put the building science expertise of DuPont right at your fingertips. Your Certified Installer acts as an on-site DuPont™ Tyvek® weatherization installation expert, providing installation services to help seal the building envelope.

### 10-Year Limited Warranty

The complete line of DuPont™ Weatherization Systems Tyvek® building wraps, Tyvek® Tape, DuPont™ Flashings Systems and DuPont™ Sealants integrate seamlessly to help you seal the building envelope so that the structures you build are more durable, comfortable and energy efficient. DuPont™ Tyvek® StuccoWrap® is backed by a limited product and labor warranty.



For more information visit  
[building.dupont.com](http://building.dupont.com)  
or call 1-866-583-2583

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