

Answering Questions about Tyvek®

As discussed in Building Knowledge University: Level 1 Course 3, Lesson 6

When you represent a leading product like DuPont™ Tyvek®, there are always imitators, detractors, tough competitors who create their own sales arguments to compete with the leader. Your best sales support is the fact that DuPont stands behind its product. Here are some general guidelines for answering customer questions, followed by some suggested responses to common questions.

GENERAL GUIDELINES FOR ANSWERING CUSTOMER QUESTIONS:

1. ATTITUDE—KEEP IT POSITIVE

Don't get defensive. You don't have to. You have an outstanding product, an excellent support organization and mounds of research from both independent and DuPont sources. If you don't have an answer, just say so. Then find someone who can help you.

2. STICK WITH SHORT ANSWERS

Keep to the point. Answer with simple facts. Sometimes, the more you talk, the more defensive you sound. The more complex your answer, the less likely you'll be clearly understood. Keep it simple. Support it with facts. Quote sources.

SUGGESTED RESPONSES TO COMMON QUESTIONS:

If I insulate, why do I need a housewrap?

The installed R-value of insulation is only realized IF the air within the wall cavity stays still and dry. An average 10-mph wind can easily penetrate cracks and crevices even in new homes. You could be losing up to 30% of the performance of your insulation. Tyvek HomeWrap was designed to help block air from getting inside walls. It helps keep drafts out and protects your insulation's rated R-value. And, just like air gets in, so can water and moisture. Tyvek HomeWrap gives you the added benefit of helping to protect your walls from water and moisture.

Does Tyvek have an R-value?

Housewraps have no significant R-value. R-value is the measured insulation value under NO air movement.

What is the difference between Tyvek and other housewraps?

Many other wraps are perforated, which means in order for them to breathe or to dissipate moisture vapor, the manufacturer has punched holes in them, resulting in a reduction of air and water holdout effectiveness. Tyvek is a non-perforated, nonwoven product with microscopic pores that are so small it still maintains excellent air and water holdout. But, Tyvek can breathe, which is essential for letting moisture vapor get out of your walls.

Can you use Tyvek under any facade?

Yes, Tyvek can be used under any cladding.

Can Tyvek be used in attics? On roofs? Under floors? On the interior?

In Canada and the U.S., Tyvek only has been tested and approved as a wrap behind exterior walls. It has not been tested for any other applications. In Europe there is a grade of Tyvek for roof lining.

Is Tyvek recyclable?

Tyvek can be recycled with other HDPE products (plastics such as milk or water jugs). Tyvek is nontoxic, chemically inert, naturally white and contains no binders or fillers.

Contact Shirley Cimburke at (804) 383-3595 in Richmond, Virginia for more information.

Is Tyvek a vapor barrier?

No, Tyvek is not a vapor barrier. It is breathable, allowing vapor to pass through it.

Can Tyvek be used as flashing?

Tyvek has not been tested or approved as a flashing material.

Can Tyvek be used with the lettering facing in?

Tyvek HomeWrap, Tyvek StuccoWrap and Tyvek CommercialWrap are equally effective in both directions. However, Tyvek StuccoWrap has a specially engineered surface that should be placed with the grooves in a vertical direction to maximize drainage capacity.

If I caulk seams, why should I use housewrap too?

Since most lumber typically has moisture content of 15 to 20%, when the house dries, the moisture content drops. Most building products expand and contract, and will pull away from the caulk, breaking the seal. Over time caulk's effectiveness is reduced.

Can I tape sheathing board seams?

Taping sheathing board seams creates a continuous vapor barrier, so moisture vapor would have nowhere to escape, reducing the wall's drying ability. Adhesion of tape to foam and wood would be temporary, due to thermal expansion and contraction. Tyvek is breathable and flexible enough to move with the sheathing.

Doesn't housewrap make a house too tight?

With more energy efficient construction, "building tight; ventilating right" is the best practice. Mechanical ventilation is more important with today's sophisticated energy saving home features. However, blower door testing on homes wrapped with Tyvek show natural air exchange rates per hour that are within acceptable guidelines in ASHRAE Standard 62.

Why should I tape seams?

Taping seams with DuPont Contractor Tape gives you the best Tyvek to Tyvek adhesion and optimal protection against air and bulk water penetration, plus the added benefits of construction site durability.

Is Tyvek necessary over foam board?

Tyvek adds considerable protection against leaky seams in foam board, similar to the protection of wood sheathing. Even interlocking edges do not adequately stop leakage.

Why do your specialists call on my customers?

Our team of trained Tyvek Specialists is there to educate builders, remodelers and architects about how our product is best used and installed. A key part of our job is also to refer business to you and to service our mutual customers in whatever way necessary to keep them loyal to you and to our product.

Is StuccoWrap recommended under stucco instead of CommercialWrap?

Tyvek StuccoWrap is recommended under stucco because it has been specially designed to work with both traditional and synthetic stucco applications. The engineered surface with special grooves is designed to assist with drainage as part of the synthetic or EIFS systems. In traditional stucco, Tyvek StuccoWrap has been shown to aid in curing, help reduce scratch coat cracking, and improve flexural strength for improved stucco integrity. Tyvek CommercialWrap will perform well under traditional stucco, however it does not offer the same surface feature.

When a building is mostly glazing, why use a building wrap?

Tyvek should be considered for its ability to help manage air, water and moisture in a building's wall system. Water inevitably finds its way inside walls, whatever the cladding. Unlike building papers, Tyvek has a combination of properties that can protect wall systems and improve energy costs. Tyvek will work together with insulated glazing to help reduce air infiltration, fostering more efficient HVAC operation and potentially lower maintenance costs.

What is the flammability of Tyvek?

The flammability characteristics of Tyvek, a synthetic nonwoven material, are similar to those of most synthetic fibers. When exposed to temperatures at or above its melting point of 2750F (1350C), Tyvek tends to shrink away from the heat source. If the heat source reaches the auto-ignition temperature of 7500F (4000C), Tyvek will burn and may produce flaming, molten droplets which can cause fire to spread from the point of ignition. For safe practices when conducting hot work near Tyvek or any other combustible materials, refer to NFPA standard 51B for Fire Prevention during Welding, Cutting and Other Hot Work—available at 800-344-3555 or www.nfpa.org. For more information, call 1-800-44-TYVEK.

Is it necessary to remove old building paper before applying Tyvek?

It is not critical to remove building paper prior to installing Tyvek. However, it is necessary to carefully inspect for damaged areas that may not be clearly visible under building paper. Since building paper does not have the same breathability characteristics of Tyvek, the wall may lose some of its ability to dry moisture to the outside.

How does water get inside walls behind a home's facade?

To help understand water damage problems, the first step is finding the water source. WHERE is water getting in? Is it a gutter problem, insufficient overhangs, improper grading where water is puddling or is there an internal source like an improperly vented bathroom. While material failure isn't unheard of, it is seldom the main reason that moisture enters wall cavities and causes damage. Much more likely causes are factors such as poor building design, poor flashing practices, improper product installation, shoddy construction practices and architectural details that channel water into walls instead of away from them. Most building scientists rank moisture problems in the following order of severity: liquid water (from rain, burst pipes, thawing ice), air driven moisture (humidity riding on air currents) and diffusion (vapor driven by temperature or humidity differences). If liquid water is represented by a bucket of water, air currents by a cup of water, and diffusion by a teaspoon of water, you can see that liquid water presents the biggest challenge. Reference: "Survey of Building Envelope Failures in the Coastal Climate of British Columbia", published by the Canada Mortgage and Housing Corporation, November 22, 1996. (Provides a good example of a field study, which shows the primary cause of water damage was poor detailing and design.)

Why can't a home's cladding prevent water from getting inside?

Most wall cladding is designed as the primary protection, but not as a complete barrier against exterior water and moisture. With any type of construction, vinyl, brick, stucco or wood, incidental water inevitably will find its way inside walls. Moisture is also generated from inside a home or building from kitchen and baths with inadequate exhaust fans, washers, dryers and other appliances. Secondary water and moisture protection from weather resistant membranes like Tyvek is necessary to properly manage a functioning wall system. For added benefit in certain construction, or for added resistance when a house has more severe exposure or cladding that absorbs a lot of water, an air space between the cladding and the wrapped sheathing is a good building practice. The Tyvek Weatherization System is designed specifically to help manage air, water and moisture as they directly relate to a properly functioning wall system.

Reference: "Moisture Sources, Chapter 8 in ASTM MNL 18, Moisture Control in Buildings. (Provides a good overview of moisture sources, including exterior, interior and construction based)

Should an air/drainage space, sometimes referred to as "rainscreen" construction, be used with the Tyvek Weatherization System?

DuPont stands behind the use of Tyvek HomeWrap, StuccoWrap and CommercialWrap when it is used both directly and with a drainage/air space under most claddings. The choice of whether or not to employ a drainage space is dependent primarily on the cladding choice, not the weatherization membrane choice. Masonry veneer requires added drainage space. We also recommend a drainage space with impermeable claddings. Tyvek StuccoWrap for example is used under foam board in EIFS and provides drainage to the system as well as acting as the weatherization membrane. Vinyl siding does not require an air space, as one is built into the cladding.

Is there a relationship between annual rainfall amounts and the need for a drainage space?

The amount of rainfall exposure affects the construction requirements of any wall. The exposure, while clearly a function of rainfall, wind and other weather conditions, is also a function of building design. For example, the "Survey of Building Envelope Failures in the Coastal Climate of British Columbia," published November 1996, by Morrisson Hershfield, Ltd. for CMHC, shows a very clear correlation between the width of overhang and the number of wall problems. In situations like this, clearly the construction would benefit from a drainage space.

Can a weather resistant membrane cause paint to peel?

No. A weather resistant membrane cannot cause paint to peel. There are many causes of paint peeling according to paint manufacturers and wood siding associations including: poor surface preparation, weather conditions during painting, condition of the paint, moisture in the siding surface or behind the siding. Paint peeling is not a function of using a weather-resistant membrane. Every house is a dynamic system where moisture moves in and out of walls. There are several ways to maximize a wall's drying potential including, wrapping with a weather resistant membrane, including an air space between the siding and the

sheathing, properly venting eaves, back and end-priming wood siding--all of which will make the walls more forgiving when water or moisture does get in.

Reference: "Why Exterior Finishes Fail," by Sam Williams, Mark Knaebe and William Feist, Fine Home Building, June/July 1997. (Overview of paint failure).

What are the issues concerning cedar siding and moisture management?

Tyvek HomeWrap is an excellent choice with cedar siding. Attention to proper installation, according to manufacturer's instructions of both Tyvek and the siding is necessary. Specifically, as recommended by the Western Red Cedar Lumber Associations, cedar siding should be back and end primed, making sure that the primer is fully dry before the siding is installed. As a best practice, installing a drainage/air space between the siding and the sheathing membrane is recommended in high rain exposure areas or when maximum wall drying capacity is desired. The Forest Products Laboratory (USDA) has the following guidelines for preventing moisture accumulation within exterior siding: use dry materials during construction, provide adequate clearance to grade and drainage at grade, design adequate roof overhangs, and install appropriate flashings. Some magazine articles have suggested that placing housewraps in contact with wood siding can cause reduced performance because of extractives or sugars contained in the wood. Simply placing housewraps in contact with wood siding, does not affect the properties of the housewrap. It is possible that if sufficiently wetted, unprimed wood siding could bleed and have an impact on water resistance of both building papers and housewraps. But, Tyvek performs equal to or better than building paper in testing against extractives. Extractive bleeding, can be significantly reduced by back and end priming of wood prior to painting.

References: "Installing Wood Clapboards" by Rick Arnold and Mike Guertin, Fine Home Building, page 62-67. November, 1997. "Installing Cedar Siding," March 1996, page 5, published by the Western Red Cedar Lumber Association. "Natural Wood Siding. Selection, Installation and Finishing," published by the Western Wood Products Association, 1990. "Before You Install Exterior Wood-based Siding," by Marke Knaebe, The Finish Line, published by Forest Products Laboratory, United States Department of Agriculture, December 1995.

What is solar driven moisture and how prevalent is it?

Solar driven moisture is vapor driven by temperature and humidity differences. Several solar-driven moisture studies conclude that solar-driven moisture is a relatively minor cause of moisture damage. One well-known exception is brick construction, where solar-driven moisture must be properly managed, using a rain screen or vented air gap between the facade and the weather resistant barrier. With wood siding, back and end-priming keeps wood siding from absorbing moisture initially and reduces the moisture which can be transferred by solar heating. As the vapor drive reverses at night, vapor is transferred back out of the wall. Measures that increase the drying capacity of the wall, such as using a rainscreen system, effectively manage moisture transferred in this manner.

References: "Limiting Solar-Driven Wall Moisture," Energy Design Update, pages 6-8, November 1997. "Moisture Movement in Building Enclosure Wall Systems" by J.F. Straube, and E.R.P. Burnett, Thermal Envelopes VI, 1995. "Water Management and Moisture Transport in Direct-Applied and EIFS Wall Assemblies" by Timothy D. Tonyon, Kevin W. Moyer and William C. Brown, Journal of Testing and Evaluation, JTEVA, Volume 27, Number 3, May 1999, pages 219-230.

What are the best water management techniques behind brick facades?

The rainscreen principle should be used with brick construction because brick absorbs water. With such a large mass, when brick heats up, the moisture inside needs a place (airspace) to condense and move down the wall. A rainscreen design consists of a relatively airtight sheathing using a weather resistant membrane, and an airspace between the sheathing and the siding that is open at the bottom and allows unrestricted air flow with a ventilated soffit or overhang. Usually there are weep holes along the base of a wall for drainage of water or moisture and vent openings every 2 feet along the top. Most codes require 1-inch spacing behind the brick. In some applications, the Brick Institute of America suggests leaving 2-inch spacing. In all cases there should be free airspace, clear of mortar droppings behind the brick.

References: "Getting Started with Brick Veneer" by Steve Thomas, Journal of Light Construction, November 1997. "Brick Veneer Steel Stud Panel Walls," Technical Notes on Brick Construction published by the Brick Institute of American, February, 1987. "Anchored Brick Veneer Wood Frame Construction," Technical Notes on Brick Construction published by the Brick Institute of American, August 1991.

What is the difference in synthetic stucco (EIFS) construction between a barrier system and a water-managed system?

The difference between the two systems is the water-managed system has a drainage plane designed into the system. The barrier system was designed not to need a drainage plane. Consistent with good building practices of other construction types, a drainage plane or rainscreen makes a wall more forgiving, in that it provides a pathway for incidental water and moisture to escape to the outside. Water and moisture will penetrate walls. That is a fact. Best building practices will add secondary protection, like Tyvek, to help manage water and moisture that does get in, and increase the drying capacity of a wall.

Reference: "Barrier EIFS Clad Walls: Results from a Moisture Engineering Study" by William Brown, James Vlott and Achilloc Karajiozie, Journal of Thermal Insulation and Building Envelopes, Volume 20, January, 1997. (Highly technical article describing the water intrusion process in barrier and water-managed EIFS)

Can Tyvek be used in direct contact with cladding, specifically stucco?

Tyvek HomeWrap is suitable for use in 3-co at stucco walls and in EIFS. In addition to HomeWrap, DuPont has recently introduced, Tyvek StuccoWrap, which has added features for this type of construction. DuPont has carried out wall mock-up testing on Tyvek in direct contact with stucco cladding. During these tests the 8'x8' walls were subjected to simulated wind driven rain loads up to 50 mph for up to 3 hours. (ASTM E331). No water was ever observed penetrating the face of Tyvek. At times, water was observed entering the wall at window/wall junctions, when poor flashing details were used.

Where are surfactants present and how do surfactants affect housewraps and building paper?

Surfactants can be present in some types of wood. They are also present in some stucco mixtures. There could be some impact on water resistance of both building paper and housewraps, when there is significant wetting with surfactants. For that reason it is important to follow all manufacturer instructions and good building practices. Wood siding manufacturer associations and paint manufacturers recommend both back and end priming to prevent bleeding. The Portland Cement Association states: "The use of soaps and detergents should not be condoned..." Surfactants, when added to stucco, can also negatively affect the stucco itself, by increasing the stucco's wetting properties and entraining air in the stucco in an uncontrolled manner, thereby facilitating water transport through the cladding.

References: "Weathertight Walls" by Paul Fiset presented at the Construction Business Technology Conference 2/28-3/2/97. "Stucco and Detergent Don't Mix", Construction Innovation, Spring 1998. Portland Cement Plaster (Stucco) Manual by John M. Melander and Albert W. Isberner, Jr., published by the Portland Cement Association, 1996.

What is the most effective way to power wash?

Power washing cleans primarily with high water pressure. Since detergents are surfactants, detergents should not be used for general power washing, only for spotcleaning tough dirt.

References: "Whole-house Pressure Washing" by Duane Johnson, The Family Handyman, pages 54-62, March 1998. "Grime Busters," by Mark Feirer, This Old House, pages 31 - 38, July/August 1997.

How does building paper compare to Tyvek as a moisture management product?

Unlike Tyvek which cannot absorb water, building paper can absorb water and become saturated. When building paper is saturated, it can transmit moisture (both liquid and vapor) at a higher rate than housewraps. A saturated building paper can increase a wall's drying time, whereas a highly breathable housewrap like Tyvek allows moisture to move out of the walls much faster. Tyvek creates a wall that is much more "forgiving." Furthermore, the moisture absorbed by building paper can deteriorate and even disintegrate the building paper.

References: "Stucco Clad Buildings," Building Insight, New Home Warranty of British Columbia and Yukon, August 1995. "Sources of Repetitive Leaks in Framed Buildings," business communication from Wesley Page, Waterproofing Consultant. "Survey of Building Envelope Failures in the Coastal Climate of British Columbia," published by the Canada Mortgage and Housing Corporation, November 22, 1996.

Do resins in OSB react with Tyvek?

Regardless of the resin type used in manufacturing, all OSB panels are hot-pressed, which cures the resin into an insoluble plastic. Placing housewraps next to these panels cannot lead to a chemical breakdown. After hot pressing, the resins are essentially inert and do not react to housewrap.