

Why Thermal Bridging and Thermal Breaks Matter in Construction

Thermal bridging reduces the overall performance of a home. *Thermal breaks* are the answer to this problem. Simple in theory, but thermal bridges have been challenging high-performance home builders for decades. It affects [HERS ratings](#). It impacts [continuous insulation](#). It affects saleability. It affects home [comfort](#). So it's a topic worth revisiting.

What is Thermal Bridging?

Thermal bridging occurs when a more conductive (or poorly insulating) material allows an easy pathway for heat flow across a thermal barrier. A classic example of this is the use of steel studs to bridge an insulated wall. The steel creates a pathway for heat to travel out of the home at a much higher rate than the rest of the wall. It's often hidden—the most common is wall studs—but, you must keep it in mind when thinking about heat loss (and the heating bills) at your home.

Areas in the wall assembly can transfer heat quicker than the insulation around it, like studs, plates, headers, and wall

posts. In a wood stud wall with R-20 batts, thermal bridging can bring the effective R-value down as low as R-15. If you put an R-20 batt into a steel stud wall, you may only get an *effective* R-value of approximately R-4. The keyword here is “effective”. Because building codes are beginning to require effective R-values rather than the number on the package, thermal bridging becomes more important.

But this isn’t about just meeting code; it’s also about energy bills. Energy prices tend to go up, so an investment in using less energy is an investment that pays bigger dividends every year.

Another issue with thermal bridges in insulated walls is moisture accumulation. You can see it inside the house as dark stains that telegraph framing members. It happens on ceilings and in closets where a lot of framing gets mashed together. This is often called ‘*ghosting*’ because the moist cool air attracts dust and forms dark lines on the ceiling which ‘ghost’ the joists.

How to Prevent A Thermal Bridge

So, if thermal bridging acts as a pathway for heat to escape the building more rapidly, a *thermal break*, or thermal barrier, helps block that pathway. Scientifically speaking, it’s an “element of low thermal conductivity placed in an assembly to reduce or prevent the flow of thermal energy

between conductive materials.” For example, insulated glazing is the thermal break for windows. The air or gas between the panes stops the conductive thermal energy from passing through the glass.

In metal and wood-framed buildings, wrapping a building’s envelope with a layer of continuous insulation cuts off *thermal bridging*. However, common issues to look out for include discontinuities in the insulation, particularly at junctions and around openings. Insulating materials such as rigid foam should be cut to fit tightly together and sealed with a [thermal break tape](#) to further prevent gaps.

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Common Ways to Reduce Thermal Bridging in Construction

There are a number of ways contractors and builders accomplish thermal breaking. Here are some of the most common:

- Use [advanced framing techniques](#), which reduce the amount of wood by increasing the spacing between framing members. For example, 16 inches on center becomes 24 inches on center for a stud-framed wall. A thermally broken double-stud wall can also be used with advanced framing. (The whole cavity is filled with insulation. This can eliminate thermal bridging in the walls, but it

does not address the floor. You can insulate the rim joist, but all of the other floor joists telegraph to the outside.)

- Consider adding a [continuous layer of exterior insulation](#), such as rigid foam or rock-wool (mineral fiber) board, over the wall before sheathing it.
- A newer approach involves applying strips of insulation over the wood studs to provide a thermal break.
- Use an alternative wall system. For example, the wood I-joist splines in structural insulated panels are thinner than most studs, and panels are usually 48 inches on center (or more), which further reduces thermal bridging.
- Implement proper insulation and thermal breaks around the foundation/slab. A well-insulated slab may mean two pours: one for the foundation wall and one for the slab, so you can provide a layer of rigid foam between the two components.
- Avoid metal fasteners of any kind that span the entire wall assembly.
- Design your basement wall so it is [better protected against moisture and water damage](#). This can allow you to use wood instead of switching to metal as a durability precaution.

As building codes evolve and homeowners become more savvy, more attention is going to be placed on thermal bridging, at every level. Whether you're building a new home to be [Zero Energy Ready](#), or retrofitting an existing building, care should always be taken to minimize and eliminate unnecessary

thermal bridging. If you're looking for a high-performance adhesive tape to help with your next project, [contact us](#). We love solving tape challenges!

Customer Spotlight: Train2Build with Bill Robinson

Bill Robinson is a nationally known construction trainer and presenter and owner of [Train2Build](#) and Train2Rebuild, a company that provides education for the building industry and homeowners. Headquartered in New Orleans, Robinson hosts consulting and training programs that focus on detailing the building envelope in the hot/humid climate, best practices for installing doors and windows, flood hardy building materials and methods, and moisture management in the Gulf Coast region.

And it just so happens that one of his favorite building materials is double-sided tape. Which makes Bill Robinson one of our favorite customers, obviously.

How did you first learn about ECHOtape? Through blogging, actually. Amanda Voss reached out to me when she was researching a series of stories on moisture management and

[adhesive trends](#).



When did you start using our products? I had become fascinated with the powers of double-sided tape through my work with [JLC](#), but ECHOtape was new to me. I reached out to Steve Underhill and he sent a couple of sample rolls for me to try and I was blown away. That was three or four years ago. I've been using ECHOtape ever since.



How many different ECHOtape products have you worked with? Any favorites? Although I have used your seaming tape, I'm mostly interested in double-sided tapes, using them in applications where I need to adhere to a substrate that I can't typically drive nails through. Or even ones where you can, because I don't like the idea of penetrations. Any hole, no matter how small, has the opportunity to become a problem when there is moisture involved. Double-sided tape allows me to have the same powerful hold, but with the added benefit of keeping

things dry. For windows and doors, I am really impressed with the Double Sided Acrylic Foam tapes, [UB-F3504](#) and [UB-F3557](#).

And I'm a firm believer in [seaming housewrap](#) with tape, instead of fasteners or nails. Sure, it takes a bit more time, but the air sealing benefits are worth the extra effort.

What's been the biggest surprise using tape in your construction projects? The surprise is the versatility. The reward is the adhesion level. A nail is a nail; it has one job and does one thing. Caulk, which is something that I use often, is more versatile, but it's still limited. Tape is truly multi-purpose. The different adhesive components allow me to choose the best stick for the job. And it allows me to connect, or adhere to different substrates that were previously huge challenges, such as irregular surfaces. The cool thing is that I can weather strip without fasteners and ensure a moisture-resistant barrier.

What has your customer experience been like? Phenomenal! My go-to guy is Steve Underhill. Mostly because I'm old school; I like talking through my challenges and you can't do that with a chatbot. Steve listens, he's genuinely curious, and what he's doing makes me look good. The results speak for themselves.

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What's next for you and your business? Bottom line: I'm a building envelope guy that lives in the humid Gulf Coast of Louisiana. Moisture issues are what we're trying to solve every day. Building homes to withstand hurricanes and

tornadoes is important. But the real challenge is moisture and microbial growth.

Right now, I'm involved in a number of flood recovery and rebuilding projects, including the [Disaster Justice Network](#) in Lake Charles and lowernine.org in New Orleans. We're creating training programs and resources – for builders and homeowners alike—to help these areas create durable, healthy, efficient, moisture-resistant homes, to better withstand the next weather event.

As a consultant, I'm also on all kinds of Zoom meetings with building pros, the best of the best. But most of these guys are from the Northeast and Midwest, their concern is insulating houses for heating. In the humid South, we need to focus on air sealing a house for cooling and moisture. Those are two different things. When it comes to hiring a company for a job, whether it's an engineer, architect, or builder, make sure they know your climate challenges. If you don't know, [ask me](#). I'm an educator and a connector, I can find you to the right people.

3 Steps to Seam Housewrap The

Right Way

No matter where you live, you will find housewrap being used on construction sites. It's one of the most widely applied water and air barriers in modern home building. Unfortunately, house wrap is often installed poorly – blowing in the wind, loose seams, ripped or torn sections, laid edge-to-edge, and even left with large gaps. All of which prevents housewrap from doing it's job, even after it's been covered with cladding or stucco.

To get it done right and have house wrap do its intended job, Building Envelope Specialist [Bill Robinson](#) shares the three steps necessary for proper installation.

Step 1: Start With a Clean Surface

Dust, dirt, and debris will keep any tape from sticking, including seaming tape. Using a wide bristle brush, clean the housewrap from the top down.





Step 2: Seal The Seams with Seaming Tape

One of the biggest, most common issues surrounding any house wrap is improper seaming. Robinson says: “Housewrap without

seaming tape is like an umbrella with holes. You're going to get wet."

Which is exactly why IBC 1402.2 and IRC R703.1.1 insist that "Other *approved* materials [i.e. housewrap] ... are used as a WRB they shall be installed in accordance with the water-resistive barrier manufacturer's installation instructions."

Most housewrap manufacturers require that every house wrap seam – vertical *and* horizontal – be sealed with tape, ensuring that the tape is wide enough to sufficiently cover the seam.

Robinson reminds us that there is another important consideration when taping a wrapped home, ambient temperature. "Tape applied to house wrap that is too cold or too hot may not adhere properly. Be sure to choose a high-quality seaming tape best suited to the extremes of your climate region.

Here we used [PE-M4535](#), a seaming tape specifically formulated with a proprietary extreme weather adhesive, that can be applied at -4°F to 105°F (-20°C to 40°C), and will adhere -40°F to 148°F (-40°C to 120°C)!



Step 3: Apply Pressure

Pressure sensitive adhesive tape needs pressure to form a proper bond. Without it, the tape may gap, wrinkle or lift, all of which will allow unwanted air or water incursions.

Using a squeegee, roller or J-roller, apply firm pressure to the tape in upward and downward strokes, making sure to smooth any wrinkles or gaps. The appropriate amount of pressure will cause the aggressive adhesive on the seam tape to form a permanent bond with the housewrap within 72 hours.



Consider Using a Tape Gun

Although many contractors will apply seaming tape by hand, Robinson recommends using a tape gun. “A tape gun allows you to apply seaming tape more easily, quickly and evenly than by hand. Plus, even though ECHOtape’s [Seaming Tape](#) tears really easily by hand, a tape gun is just plain faster.”



“Also, don’t make the mistake of thinking that a tape gun replaces a roller or squeegee. It doesn’t. You still need that additional pressure to really seal the overlap. It’s a step most contractors skip, and it’s almost always a costly or even litigious mistake.”



Seaming house wrap is not difficult. Clean. Seal. Apply pressure. Repeat. But for large projects, it can be time-

consuming and tedious to do it right the first time. Is it worth it? Absolutely! Seaming tape is critical for creating a weather-resistant seal on the exterior of new construction, so it is vital that the tape properly adheres to the housewrap material.

Keep in mind, not all seaming tapes are created equal. [Seaming tape for house wrap](#) should have high shear and holding power to ensure that the tape will hold long-term. It should also have the ability to withstand a wide temperature ranges and humidity levels in order to prevent flagging or failing, and should be hand-tearable for easy application. UV-resistance is another critical characteristic that allows housewrap tapes to withstand sun exposure throughout the duration of the project.

Have more questions? Check out our [Field Guide to Housewrap Seaming Tape](#) or call us directly at 800-461-8273. We love solving tape challenges!

Customer Spotlight: Midwest

Steel Carports

Barns. Garages. Warehouses. If you can envision the metal building of your dreams, the team at [Midwest Steel Carports](#) can make it happen... with a little help from ECHOtape's metal building tape products.

The Best Metal Building Tape for Midwest Steel Carports

What began as a modest family-owned metal building company in 2013 has grown to become one of INC 500's fastest-growing private companies in America. That's a huge achievement for a tight-knit, family-owned business that's grown from five to 30 employees and counting.

ECHOtape first connected with Purchasing Manager Rodrigo Aguilar at MetalCon 2018 in Charlotte, NC.

"From insulating radiant barriers to seaming metal roofs, we use double-sided tape pretty heavily in all our builds," says Aguilar. Finding a tape that would hold its seal no matter the Midwest weather fluctuations – extreme cold, rain, and heat – had been a particular challenge. ECHOtape's extreme temperature ratings seemed promising. After returning from MetalCon, Aguilar ordered a few rolls to test on his next insulation project. The rest is history.



These days, Aguilar places a steady order of [DC-M194A All-Weather Double Sided Tape](#) and [PE-M4535 Seaming Tape](#) from ECHOtape's expanding [online store](#).

"Ordering online has been really efficient," says Aguilar. "I can order exactly what I need for the specific project, and have it delivered to the warehouse or the job site. Customer service has been fantastic, and their team has been a great resource when I have a question or need to troubleshoot specific issues."

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Winning Big With Customer Focus

Aguilar continues: "At Midwest, we're an incredibly customer-oriented company. We like to take care of the needs of our clients, nurturing them through the process from quote to installation and long after. What's great is that ECHOtape is exactly the same way. They hold the same values we do when it's come to customer service and family-owned businesses. It's a great partnership and a fantastic product."

The mission at [Midwest Steel Carports](#) is to be the leading customer-centric carport company that helps people protect what matters most to them. But truth be told, they are more than just carports. Their projects [encompass metal buildings](#) of all shapes and sizes including barns, carports, garages, RV carports, sheds, warehouses, and more. That expansion has been

fueled by an increased need for steel and metal building in both residential and commercial applications. It's a rapid growth that shows no sign of slowing. The company expanded its reach from Michigan and Wisconsin into Ohio, Illinois, and Indiana, "and this year, we moved our corporate offices to Texas," says Aguilar.

"We've been doubling new builds every single year. That's in part to our customer experience, but it's also the fact that steel offers better longevity than wood products. Switching from lumber to steel may be slightly more expensive at the outset, but it's more efficient in the long run. Consumers and businesses are looking for that longevity."

Contractor's Field Guide to House Wrap & Seaming

In this Field Guide to House Wrap & Seaming, we've gathered the most important installation and seaming tape tips to build quality, energy-efficient buildings.

We will cover building code best practices, how to install housewrap (the right way), how to prevent common house wrap problems, reasons why housewrap can still leak, and how

seaming tape can make your building project airtight and moisture-proof.

House Wrap vs Vapor Barrier – What's the Difference?

House wraps are installed to the outside surface of a home's envelope, undersiding, or exterior cladding.

Housewraps must be **permeable enough to allow water vapor to pass through them from the warm side, but still, stop bulk water like rain from entering on the cold side** – similar to a Gore-Tex jacket.

Per [Building America](#) guidance, house wrap should be lapped shingle style over any exterior wall flashings installed around openings, penetrations, or where the walls intersect roofs, foundations, or other transitions. Any holes through the wall, such as for windows, water spigots, exhaust vent outlets, HVAC condensate lines, or light fixtures and receptacles, should be carefully sealed and flashed. It's very important for any water vapor that makes it to the backside of an air barrier to keep moving so it gets to the air around the home.

Vapor barriers, on the other hand, are used to **stop water vapor from entering a wall cavity**, where the gas can turn into liquid water if it contacts a cold surface. If this happens

and the water can't evaporate quickly, wood rot, mold, and mildew become a reality. A reality that is trapped on the inside of your wall.

No bueno.

The placement and permeability of vapor barriers and house wraps are addressed by building codes but vary by region. **Vapor barriers are put on the inside face of wall studs in cold climates but they're put on the exterior of homes in hot and humid climates.**

The method? You want the vapor barrier as far away from the coolest wall surface as possible. In hot, humid climates, the cool side of the wall is the inside of the home, where the air conditioning is operating.

For an in-depth look at moisture in buildings, check out [Building America's moisture flow guide](#).

Related: read about [the difference between air barriers and vapor barriers](#).

Why Does Perm Rate Matter?

Permeability (aka Perm rate) is the rate at which a house wrap allows water vapor to pass through it.

Inexpensive or poorly made house wraps often have perm ratings

in the 8 to 12 range, and they should be avoided.

This is especially true for older homes in cold climates with little or no moisture barriers. Moisture will escape through the wall cavity and sheathing, and if the house wrap doesn't allow it to pass through fast enough, it will condense and accumulate in the form of frost and ice. When the ice thaws, you'll end up with wet sheathing and/or wall cavities—not good.

Instead, choose high-quality house wrap with a perm rating over 50.

Building Code is Best Practice for House Wrap Installation

Though many builders think of the IRC as the bare minimum requirement, when it comes to WRB installation the code is actually 'best practice.' It's all in section R703 – Exterior Covering of the 2018 IRC.

R703.1.1 “The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior cladding ... and a means of draining to the exterior water that penetrates the exterior cladding.”

R703.2 addresses the Water-resistive barrier, giving builders and contractors two options for materials: #15 lb tar paper meeting ASTM D226 requirements OR “other approved water-resistive barrier” (Meaning: approved by the local building official.) The manufacturers of house wraps and other WRB materials generally obtain an ICC Evaluation Service Report that code officials rely on when determining whether to accept an alternative material to #15 tar paper or not.

When “Other *approved* materials... are used as a WRB they shall be installed in accordance with the water-resistive barrier manufacturer’s installation instructions.” There it is – the manufacturer’s installation instructions are referenced in the code and are enforceable by the local official.

It’s critical to select the right house wrap for a home’s climate, from the dozens of varieties available; but even before that, you’ll need to find out if a house wrap is required for [code compliance](#) in your jurisdiction. Once you’ve determined if it’s necessary to meet code, you must be sure to install the product in strict adherence to manufacturer specifications so that it functions as intended.

How to Install House Wrap The Right Way with Seaming Tape



While manufacturer instructions for installing housewrap vary, generally there are three main tasks involved: wrapping, taping, and flashing. ([Click here](#) to watch an exterior house wrap installation, courtesy of the NAHB Research Center.)

Wrapping

Wrapping should start at the foundation, or the base of the wall assembly, extending at least an inch past the wall-to-

foundation intersection and continuing upwards like shingle installation with the higher course overlapping the lower.

Horizontal seams should overlap at least 2 inches and vertical seams a minimum of 6 inches.

We found [this post on avoiding a bad wrap](#) to be helpful.

Taping

All of the seams for the product should be taped according to manufacturer's instructions. Most house wrap manufacturer installation instructions have minimum horizontal overlaps of 4-6 inches and minimum vertical overlaps of 6 -12 inches.

Most also require or recommend 1 in. plastic or metal cap fasteners. The caps protect the house-wrap from damage during installation and spread the surface area of the fastener over a broader area of the WRB so the fastener is less likely to tear through.

[Double-sided](#) seaming tape that's applied on one part of the wrap with another course overlapping (think shingle lap) helps prevents moisture – and meets code requirements.

Flashing

One of the most precise jobs when working with house wrap is properly installing the product around windows and doors. Flashing of exterior windows and doors is critical in casting rainwater away from those areas so that assemblies remain dry

and durable.

Plus, wherever roofs meet walls, kick-out and step flashing must first be installed before continuing the housewrap shingle-fashion over the flashing pieces. Otherwise, the roof/wall intersection creates a place where water will be pushed into the wall, causing major structural damage.

Check out this [Technotes](#) piece from the Home Innovation Research Labs and the Internal Code Council.

Here are three of our favorite flashing tape tips:

- Leave the outer release paper on until the flashing is stuck to the sill. That reduces the chances of the tape sticking to itself during installation.
- Use a square block to push the tape tight into the corners, being careful not to puncture the corner.
- Use a J-roller to push down the tape. Make sure to roll out any bumps and eliminate 'fish mouth' bubbles.

For more in-depth best practices [watch this video from ProTradeCraft](#) on proper house wrap installation.

The following are key takeaways:

- Extend house wrap below the mud sill—for water management, but also for air sealing. Seal the bottom of the house wrap to the sheathing with caulk or tape.
- Overlap the layers shingle-style as you go up the wall—like roofing shingles.

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- Overlap vertical seams 6-12 inches.
 - Overlap horizontal seams 6 inches (upper layer over lower layer).
 - Fasteners: use a cap nailer because slap staples leak.
 - Apply house wrap up the gables before installing exterior trim, even if the attic is not conditioned. House wrap is not just for air sealing the insulated parts of the house, it is mainly for water management. If the gable isn't covered, water can get to the framing, and even behind the house wrap below.
 - Wrap and seal the underside of cantilevers. Better yet, add a solid sheet good to cover the bottom, and wrap over that.
 - [Tape seams](#) on flat house wrap with 2-inch tape; use 3-inch tape for wrinkled house wraps.
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How To Prevent Common House Wrap Problems

The performance of a high-quality, vapor-permeable, house wrap is dependent on proper installation, careful handling, and limited exposure to UV radiation and outside elements. The goal of house wrap is to create an air and moisture barrier that also prevents moisture accumulation in the wall system. Ultimately, house wrap should boost a home's energy-efficiency and create a healthy, comfortable indoor environment.



Our friends over at [Barricade](#), pulled together the most common house wrap issues. Here's what you need to know:

Improper House Wrap Installation. Experienced and skilled house wrap installers avoid common problems with house wrap by following several key steps when installing house wrap.

- House wrap is typically applied from the bottom of the building up, overlapping the horizontal joints by a minimum of six inches and the vertical joints by a minimum of twelve inches. Expand the house wrap over the footing top by a minimum of two inches.
- The house wrap should be fixed every 12 to 18 inches with specific stapling nails or nails designed to hold down house wrap material.
- Installation of house wrap around the window and door openings involves a Y-cut from corner to corner in the openings. Then, the loose material is folded through the openings and fastened securely.
- Seal all seams with manufacturer recommended tape, including over the layers, the top and bottom edges, and the rough openings. It is also essential to seal the areas cut by subcontractors during the installation of the cladding.

Problems with House Wrap Due to Rough Handling. Rough handling or long exposures to wind and construction debris can tear, rip, and cut the house wrap. These damaged areas of the house wrap will allow air and moisture to enter the wall system. It is critical to seal and repair all damage to the house wrap

due to rough handling and overexposure to wind and construction debris.

Damage Due to Overexposure to UV Radiation. Overexposure of house wrap to the sun's ultraviolet (UV) rays can discolor and photo-degrade the house wrap. UV exposure can also cause the house wrap to lose tensile strength and water repellency. In some cases, this can happen quickly, depending on the house wrap's ultraviolet (UV) rating. The UV-rating of a house wrap is the maximum time a house wrap can withstand exposure from the sun before becoming damaged.

10 Reasons Why House Wrap Can Still Leak

House wrap is an air barrier that creates an airtight structure by stopping air flow through a [building's envelope](#). But for a house wrap to stop air flow, it should be continuous over the entire building enclosure and be durable over the lifetime of the building. **Unfortunately, there are several reasons a house wrap can leak after installation.**

1. Housewrap seams that are **not sealed properly** can cause air leaks. Sealing house wrap joints with the manufacturer's approved [seaming tape](#) can improve the wrap's performance by about [20 percent](#). Sealing the seams after installing the house wrap is essential to an

airtight building.

2. Using the **wrong fasteners** can cause air leaks. It is crucial for airtightness to use manufacturer's stapling nails or nails designed to hold down house wrap material. Also, nails should be at least 1-inch long and spaced 12 to 18 inches on-center.
3. Not repairing the **tears, rips, or cuts** in the house wrap that occur during installation can lead to air leaks. It is *critical* to seal the damaged house wrap with code-approved contractor sheathing tape before covering with siding. Repair of larger tears in house wrap requires a taped 6-inch overlap of house wrap.
4. **Not sealing the bottom edges** of the house wrap can lead to air leaks.
5. Air leaks can occur if the house wrap is **cut to lie flat before installing siding, but not repaired**.
6. Air leaks can occur if the **edges of the house wrap, cut at the rough windows and door, are not sealed**. This error is common when installing utilities, pipes, cable tv, etc. For airtightness, wrap the fabric around the edges of windows and doors to the inside of the frame and seal with house wrap tape.
7. **Improper overlapping** of roles of house wrap can cause air leakage. Overlap and seal vertical seams by at least 6 inches. Overlap and seal horizontal seams by at least 4 inches.
8. Air leakage can occur if the **house wrap does not reach the top of the wall**. The house wrap should wrap up and over the top plate.

9. If the house wrap is **left exposed to excessive UV rays**, the house wrap may deteriorate rapidly.
10. If a house wrap is **not resistant to cold**, it may crack at low temperatures.

Maximizing the air barrier potential of house wrap requires the use of a quality house wrap, along with skilled house wrap installers. **A quality house wrap should have high-tear and tensile strength, UV stability, cold resistance and ease of installation**, which will limit damage and errors during construction.

House wrap and vapor barriers [can get complicated](#). The movement of water, the possibility of drying, which side is warm or cool – these all factor into the success of a [building's envelope](#). However, getting the installation right is the final detail, ensuring that a well-chosen wrap or barrier actually performs as intended. Time spent making sure the details, like taping and flashing and placement, are all correct, means success in the long run.

After years of testing, and working with high-performance building professionals, ECHOtape has released its own seaming tape, [PE-M4535 All Weather Construction Seaming Tape](#) in addition to its [All Weather Double-Sided Tape](#). Formulated with a proprietary cold weather adhesive, it is engineered to adhere to a wide range of building materials and surfaces including house wrap, exterior, and rigid insulation, sheathing, vapor barriers, and a variety of underlayments.

If you're a building contractor, [ask us](#) about a sample roll.

Why Seaming Tape Matters More Than Ever

In just about every climate in which we live and build, the No. 1 job of any building enclosure is environmental separation.

Keeping water, air, and heat locked in or out of buildings can make them more resource-efficient, durable, and safer for occupants.

The greatest challenge in this endeavor is maintaining the continuity of our air barriers, drainage planes, and insulation layers, particularly at penetrations, transitions, and margins of building assemblies.

The answer?

High-performance seaming tape.

Seaming Tape – A Brief History

In the early 1970s, residential builders knew almost nothing about airtightness and air movement. Even engineers were

ignorant about hot and cold air leakage in buildings because the basic research hadn't been done yet.

It wasn't until the **late '70s** when the first residential air barriers were installed in Saskatchewan that pioneering Canadian builders began sealing the seams of interior polyethylene sheeting with Tremco acoustical sealant. (The first seaming tape, if you will.) The results were self-evident, and since then, most North American building codes now require builders to include details designed to reduce air leakage.

The same holds true in Europe, where using tape to seal the building envelope is the standard operating procedure in passive house (a.k.a. Passivhaus) construction. Passive Haus results in ultra-low energy buildings that require little energy for space heating or cooling.

In fact, tape experts cite Europe as the best example of the overall utilization of acrylic tapes in construction. "In Europe, they tape up everything when building or retrofitting to create an air-tight seal," says David Joyce, nationally known construction and tape expert, and owner of Synergy Companies Construction LLC. "Energy costs are much higher there, and it's a matter of necessity." Joyce notes that the industry here in the U.S. "is just recently becoming more aware of the benefits of air-tight building practices and that acrylic tapes make that much easier."

It's easy to see why the practice of seaming is seeing a surge among insulation professionals: The energy benefits of air

barriers are huge.

A 2005 study from the National Institute of Standards and Technology, *“Investigation of the Impact of Commercial Building Envelope Airtightness on HVAC Energy Use”* by Steven Emmerich and others, found that just **incorporating an air barrier in a building can reduce its heating and cooling cost by up to 36%.**

Furthermore, uncontrolled air leakage could have consequences beyond increased energy consumption, regarding health and safety of the building occupants, as well as premature deterioration of building materials.

Additionally, the International Energy Conservation Code (IECC) and several state energy codes now **require the use of air barriers**. In addition, a growing number of municipal authorities having jurisdiction (AHJs) and green-building trade groups are calling for their use. Some federal agencies and large owner and developer groups also require them.

More importantly, energy efficiency and occupant comfort—two key ingredients of sustainable design—are driving the use of air barriers across market sectors. With today’s high cost of energy and concerns about Indoor Environmental Quality (IEQ), air barriers are one of several construction systems with a critical role to play.

As our building profession evolves to becomes more energy-efficient, more sustainable, and more “green”, air sealing every building is going to become the norm. And, of course,

more tape will be used to do this.

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Benefits of Seaming Tape in High-Performance Building

There are three primary drivers for the increased usage of seaming tapes on job sites:

1. More stringent codes. Increased building envelope requirements – air and moisture control layers;
2. Improved tape technology.
3. Heightened awareness of the high-value seaming tape by builders, contractors, and building scientists.

Don't just take our word for it. Consider this direct quote from [Building Energy Code Resource Guide](#)

To limit air leakage, builders use tapes to seal the seams of a variety of membranes and buildings products, including housewrap, polyethylene, OSB, and plywood. Tapes are also used to seal duct seams, to seal leaks around penetrations through air barriers – for example, to seal around plumbing vents – and to seal sheet goods to a variety of materials, including concrete.

“Tapes have become much more commonplace in the construction

industry today than they were 10 years ago,” Joyce says. “And they’re going to become more and more so as air sealing, energy efficiency and durability become more important, and builders are becoming more educated about the benefits of tapes over other sealants or flashing materials.”

Indeed, trend reports indicate that overall, tapes used on job-sites will outpace the overall construction industry growth (3%-5%) with an estimated 6%-7% annual growth rate. New residential tape use will increase the fastest in double digits due to code compliance. In the past, tapes were used sparingly on joists and viewed as a temporary fix or cheap solution.

Today, tapes have transitioned into high value and highly functional products that enhance building airtightness, prevent water intrusion, and even increased roof safety and integrity in [high wind events](#).

While no single tape works well in every air sealing application, there are four common benefits worth considering:

1. Seaming tape is very easy to use.
2. In context to other building materials, tape is inexpensive.
3. Effective air sealing – air control, moisture control, and “protection” of finished materials – depends on both the materials being used (what are you taping?) and what are the conditions (in heat, in cold, etc.).

There are a lot of tapes available so you can match the conditions with the situation.

4. Tape can create a continuous barrier when applied correctly, which is what you need an air seal to be for it to be effective. This is hard to get with other kinds of fastening systems.

Today's newer and higher-performing adhesive tapes offer builders better choices and multiple advantages over conventional building materials. These tapes actually stick better over time, are more durable, and are more weather resistant. Indeed, modern adhesive technology is much more sophisticated as a whole.

The Next Generation of Seaming Tape

When it comes to choosing the best construction tape, the maxim that "if it ain't broke, don't fix it" doesn't cut it. High-performance construction tapes will become more important as the construction industry deals with stricter regulations and as best practices in the industry change with the times. To stay ahead of these changes, and meet the needs of high-performance builders across North America, we've recently launched a new seaming tape that uses advanced adhesive technology to stick to just about anything

[PE-M4535](#) is a next-generation seaming tape for the

construction professional looking for superior performance. Formulated with a proprietary cold weather adhesive –excellent cold climate adhesion to -4°F! – [PE-M4535](#) is engineered to adhere to a wide range of building materials and surfaces. Made from an advanced polyester backing, it is extremely strong, yet can still be torn by hand, which makes it easy to apply.

Highly adaptable and versatile, PE-M4535 can be used in a wide variety of [building envelope](#) sealing applications, such as:

- House wrap
- Insulation, including polysio-cyanurate and reflective insulation
- Exterior sheathing
- Vapor barriers, including polyethylene films
- Flooring and [roofing underlayments](#)

At [ECHOtape](#), we're focused on generating real-world [adhesive solutions](#) that help Building and Construction professionals work more efficiently and cost-effectively on every job site. It's why we've engineered such an extensive line of durable, resilient, weather-resistant construction tapes, including seaming tape, insulation tape, foil tape, stucco tapes, cold weather tape and more. So, no matter what project comes your way, the quality and reliability of your work are guaranteed.