



Sto Corp. | Waterproofing/Air Barrier

StoGuard™
Superior Spray-On
Building Wrap

Protect First. Make it Last.™

The StoGuard™ assembly.

What is the StoGuard™ assembly?

StoGuard offers several application options for joints, rough openings and sheathing boards depending on preference and cladding type.

The StoGuard™ assembly is applied in two steps:

Step One – Initial air barrier component

StoGuard joint and rough opening treatment choices:

- StoGuard Mesh and Sto Gold Fill
- StoGuard Fabric with Sto Gold Coat or Sto EmeraldCoat
- StoGuard Tape (peel & stick)

Step Two – Extended air barrier protection and waterproofing component

StoGuard sheathing board treatment choices:

- Sto Gold Coat is specially formulated for use under EIFS and other claddings
- Sto EmeraldCoat is specially formulated for use under stucco and other claddings

Both Sto Gold Coat and Sto EmeraldCoat can be applied by spray, roller or brush to wall sheathing and prepared concrete or concrete masonry wall construction. Both coatings pass ASTM D-1970 for nail sealability.

Note: The ASTM test standard is for a nail over a wood substrate.

StoGuard™ is durable!

Since waterproofing and air barrier materials are hidden behind cladding and consequently inaccessible for maintenance or repair, make sure to choose a durable, structural barrier. StoGuard is a proven long-wearing waterproofing air barrier.

StoGuard has undergone rigorous testing by independent test agencies to demonstrate compliance with the International Code Council – Evaluation Service and the Canadian Construction Materials Centre (CCMC) criteria to confirm its durability. StoGuard has been proven to be an extremely durable waterproofing and air barrier material with exceptional drainage performance.

How is StoGuard™ installed?

The StoGuard assembly of products is easier to install than sheet wraps and does not require highly skilled labor. Sto Gold Coat and Sto EmeraldCoat can be applied with an airless sprayer, roller or brush for the same smooth continuous protection. The gold or green product color makes application inconsistencies easy to identify. Unlike some solvent-based materials, StoGuard has low VOCs and is not toxic. No additional breathing apparatus or special handling is necessary.



StoGuard Mesh and Sto Gold Fill



StoGuard Fabric with Sto Gold Coat or Sto EmeraldCoat



Sto Gold Coat is specially formulated for use under EIFS and other claddings



Sto EmeraldCoat is specially formulated for use under stucco and other claddings



Superior waterproofing.

Unlike conventional sheet wraps that tear apart at the seams and leak through the staple holes, the StoGuard assembly of products is seamless and tear proof.

Moisture protection in wall construction

The function of moisture barriers in walls is to protect against the transfer of incidental water into the building. Additionally, they shield moisture sensitive components, such as wood or gypsum-based sheathings, in the event of a breach in the outer wall covering, such as a crack in stucco.

The conventional choice for moisture protection has been asphalt saturated felt or paper. In addition to tearing and mis-lapping during construction, felt or paper might suffer significant performance break down with exposure to weather conditions. StoGuard can be left uncovered for up to six months (Sto Gold Coat) or two months (Sto EmeraldCoat) with minimal degrading.

StoGuard™: superior waterproofing

StoGuard has the added ability to allow water vapor to pass through yet keep damaging liquid water from penetrating and saturating the sheathing. By applying StoGuard as your waterproofing treatment you can have the peace of mind that your walls have minimized risk of damage from water intrusion during or after construction.

StoGuard resists water penetration for up to 75 minutes when subjected to water spray equivalent to eight inches (203 mm) of rainfall per hour driven by an approximate 50 mile-per-hour (80 km/h) wind.

Note: The product was tested in accordance with ASTM E-331 at simultaneous pressure of 6.24 psf (300 Pa) and water spray of 5 gal/ft²/hr (3.4 Lit³/min).



StoGuard has been tested in accordance with AATCC-127 (modified), Water Resistance: Hydrostatic Pressure Test, and resists water penetration for months. Ordinary housewraps and building papers, depending on brand or type, measure water resistance in hours, and in some cases, allow water penetration within the first few minutes of exposure.

Vapor permeable.

Unlike some sheet membranes that do not allow water vapor to diffuse through, the StoGuard assembly is water vapor permeable.

By allowing for water vapor diffusion, while limiting air infiltration, StoGuard™ is "breathable."

As a "breathable" waterproof air barrier, StoGuard permits water vapor to diffuse through it. This is important for the drying of the wall, should water accumulate in materials during construction or incidental water leakage occur after construction.

Some sheet membranes do not allow vapor diffusion, which can result in a damp or saturated building assembly.

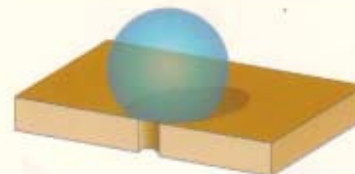
How can a material be both waterproof and vapor permeable?

Water vapor consists of very small individual water molecules in a gas form. Water vapor molecules will easily flow through pores and openings in a material. More, or larger, openings result in more vapor that flows through. Materials that permit the passage of water vapor are termed vapor permeable.



Small water vapor molecules passing through opening

Liquid water is cooled water molecules held tightly together via cohesion. The tight cohesive force creates surface tension that draws water into larger round drops. This surface tension allows water to cling to other objects. Surface tension will cause liquid water to bridge the small holes that water vapor can pass through.



Large liquid water drop on top of opening

High performance air barrier.

Before the StoGuard assembly, conventional sheet wrap products left you hanging in the breeze. Use StoGuard for a superior air barrier with seamless protection.

Air barriers in wall construction

The purpose of an air barrier in walls is to minimize air intrusion and leakage through the wall construction.

The benefits of an air barrier are:

- Reduced risk of condensation caused by air leaks through the wall construction
- Improved thermal efficiency of the wall construction
- Decreased energy costs
- Increased occupant comfort
- Provides opportunity for pressure equalized or pressure moderated wall system design, thus minimizing the risk of rain water penetration through wall construction

Materials like asphalt saturated felts and some housewraps have low air permeability but do not perform well as air barriers. This is not only because they have many seams that reduce their effectiveness, but they are non-structural.

StoGuard™: a high performance air barrier

StoGuard is continuous, structural (when applied to sheathing) and durable.

Because StoGuard is permanently adhered to sheathing it becomes a part of overall physical structure. There is no tearing or gapping between StoGuard and the sheathing, only smooth uninterrupted coverage. This structural characteristic allows StoGuard to outperform sheet building wraps.

Sheet building wraps, which are attached with nails or staples, may have gaps that allow air infiltration and leakage. They can also tear away from the fasteners or dislodge with wind gusts.

According to the Pennsylvania Housing Research Center* "...house wraps do very little or nothing to improve the overall air tightness of a wall system"

*Source: Pennsylvania Housing Research Center survey. "The Use of Housewrap in Walls: Installation, Performance and Implications." 1999

Air permeability of StoGuard™

The generally accepted air permeability level based on Canadian code requirements is 0.02 U/(s.m²) [0.004 cm³/ft²]. Based on independent testing StoGuard exceeds this criterion by a factor of more than 10.

What about air leakage and mold?

In the last decade, studies have shown air leakage to be a significant potential source of condensation and moisture accumulation in building envelope assemblies. By constructing an airtight building envelope the risk of moisture problems – decay, corrosion, loss of insulation value, mold growth and Indoor Air Quality (IAQ) problems – that can occur because of air leakage and condensation are minimized.

StoGuard™ is energy efficient!

According to US Department of Energy statistics "up to 40% of the energy consumed to heat or cool a building is due to air leakage into and out of the building." Using StoGuard helps prevent air leakage and thus reduces energy costs.

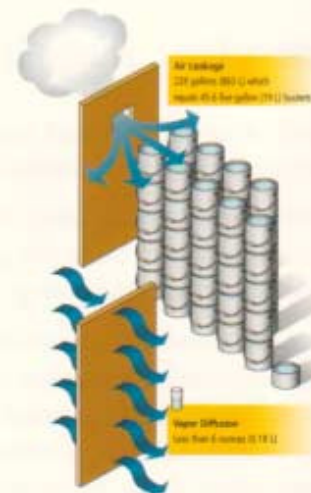
A study of commercial buildings by the National Institute of Standards and Technology (NIST) confirmed that air barriers promote energy savings ranging from 30-40% for heating climates and 10-15% for cooling climates.

Not only is StoGuard an air barrier, which can help with indoor air quality and energy savings, it is also water-based with low VOCs. Make sure your choice of air barrier is also good for the environment.



Conventional sheet wrap

Comparison of Potential Moisture contributed by Air Leakage versus Vapor Diffusion over period of One Year



Extrapolation of data from: *Preventing Indoor Air Quality Problems in Educational Facilities: Guidelines for Hot, Humid Climates*, by CH2MHill in cooperation with Disney Development Company.

Air leakage versus vapor diffusion.

While both air leakage and water vapor diffusion deliver moisture to the assembly, recent studies have shown air infiltration and exfiltration to be a significant potential source of moisture accumulation in walls and/or high relative humidity levels in interior spaces.

Water vapor diffusion on the other hand has been shown to be a much less significant potential source of moisture than it once was thought to be. The diagram above illustrates this difference.

When moving air contains water vapor, large quantities of moisture can transport through relatively small openings. Any tears, holes, penetrations will increase this level of humidity in a building.

What is StoGuard™?

StoGuard is an efficient assembly of products which combine to create a waterproof air barrier in wall construction. By protecting sheathing first, this seamless spray-on building wrap provides superior protection against moisture intrusion and air leakage.

During construction, StoGuard is resistant to liquid water and protects sheathing and rough openings. After construction, StoGuard protects against incidental water leaks and air leakage.

Protect First. Make it Last.™

StoGuard can be used under brick, wood, vinyl, cement siding, cement stucco and exterior insulation and finish systems.

Together these components fuse to create an uninterrupted structural waterproof air barrier that can improve indoor occupant comfort and reduce energy costs.

The StoGuard assembly of products offers significant improvements over paper and fabric building wraps and rubberized, solvent-based membranes. Sto EmeraldCoat® and Sto Gold Coat® provide continuous coverage of sheathing without the penetrating nail or staple holes characteristic of conventional building wraps.

The performance of this innovative waterproof barrier has been validated through testing at the University of Waterloo and Oak Ridge National Laboratory.



Critical Detail Checklist for Wall Assemblies



1. Provide flashing at decks



2. Provide diverter flashing at roof/side wall terminations



3. Protect rough openings



4. Provide sill flashing beneath windows and doors



5. Provide head flashing above windows and doors



6. Seal around window and door penetrations



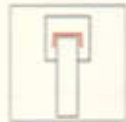
7. Seal around wall penetrations



8. Provide joints at required locations and seal where necessary



9. Provide coping over parapets



10. Provide saddle flashing at lower/higher wall intersections

Also see *Moisture Control Principles for Design of Wall Assemblies* in

StoGuard™: Air Barrier and Moisture Control Handbook.

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Sto | Building with conscience.

For Exterior Walls, Sto Beats All

- Superior air leakage resistance and moisture protection; impervious to liquid water; protects sheathing and rough opening during construction; protects sheathing against incidental leaks and air leakage after construction.
- Seamless; no laps, no staples, no attachment holes
- Continuous adhesive bond
- Tearproof; cannot be torn or stretched
- Structural adhesive attachment to sheathing, not vulnerable to wind pressure, lifting or tearing. To qualify as an air barrier requires structural stability; StoGuard on sheathing provides this.
- Durable; protects exposed sheathing for up to six months (Sto Gold Coat). Waterproof; does not deteriorate with exposure to water.
- Easy to install. Spray application, no large sheets or rolls to handle. Easily installed by one worker or a team, resulting in reduced labor costs.
- Safe to install; non-flammable, low VOCs
- Gold or green color makes inconsistencies easy to identify

A full toolbox to support you...

- Superior technical support staffed with 20+ year construction veterans and supplemented with 24-hour online FAQs and Ask A Wizard.
- 300+ brilliantly colored cutaway details provide an in-depth product reference allowing you to review instructions for clarity and precision.
- StoMachine Technology, for faster and more consistent product application, saves time and labor cost.
- As an accredited AIA provider, 14 continuing education courses available on StoGuard and other topics, including two online courses.

ATTENTION

Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. **STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.** For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com.

StoGuard™ vs. Building/House Wraps



StoGuard™ seamless durability makes the difference!

Common building wraps used in residential and commercial structures can fall down on the job.

- Improper installation and multiple seams can allow water penetration.
- Damage during and after installation can compromise performance.
- Exposure to the weather can tear paper and fabric wraps away from the structure. The longer the exposure the greater the danger.
- Even when installed properly, cycles of wind pressure can tear the wraps after the cladding has been installed.

StoGuard is different. StoGuard's seamless protection defies the elements. StoGuard is a spray- or roller-applied, fully adhered, seamless waterproofing/air barrier assembly that protects structures from air leakage and water intrusion. StoGuard is not a paper or fabric wrap. It requires no penetrating attachments.



StoGuard assemblies consist of two major components:

- 1) Joint and Rough opening treatment with StoGuard Mesh and Sto Gold Fill®
- 2) Sheathing treatment with either Sto Gold Coat® or Sto EmeraldCoat®

Together these components create a seamless waterproofing/air barrier that is breathable.

Contact your local distributor for more information.
Please visit us at www.stocorp.com or call us toll-free at 800-221-2397.

sto





StoGuard™ vs Wraps

Feature	StoGuard™	Spun Bonded Polyolefin	Felt Paper
Tearproof/Durable	✓ Yes	No	No
Seamless	Yes	No	No
Structural/Adhesive attachment	✓ Yes	No	No
Structural integrity (E-1233)	Yes	Not reported	Not reported
Waterproof	✓ Yes	No	No
Water penetration testing (AATCC-127)	✓ 845 cm	280 cm	52 cm
Vapor Permeable/Breathable (ASTM E-96)	Yes	Yes	Yes
Air Barrier (ASTM E-2178)	Yes	Yes	No
Energy Savings*	Yes	Yes	No
Mold Growth (ASTM D-3273)	No	No	Not reported
Flammable	No	Yes	Yes

*In tandem with other air barrier components to create an air barrier system.



ATTENTION

This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. It should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of this product or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. **STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.** For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com.



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