3M Science. Applied to Life.™

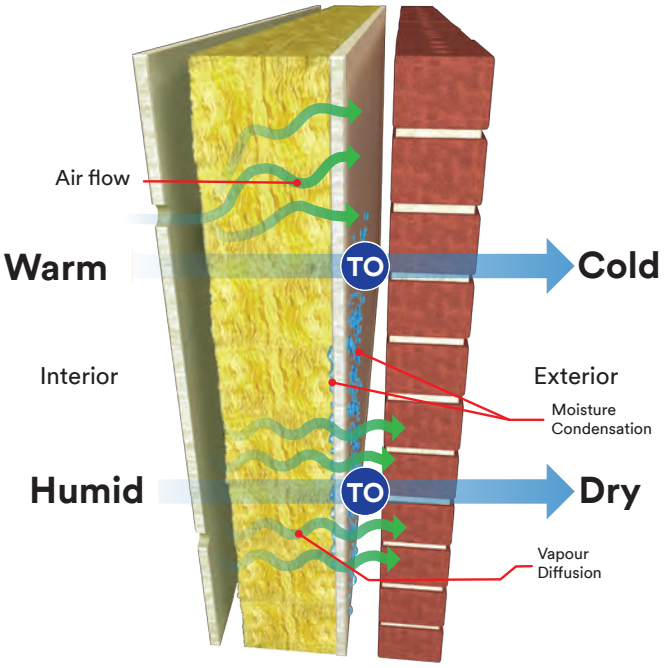
Advanced technologies for enhancing the building envelope.

3M Building and Construction Market

Controlling air is crucial for the health & energy efficiency of buildings.

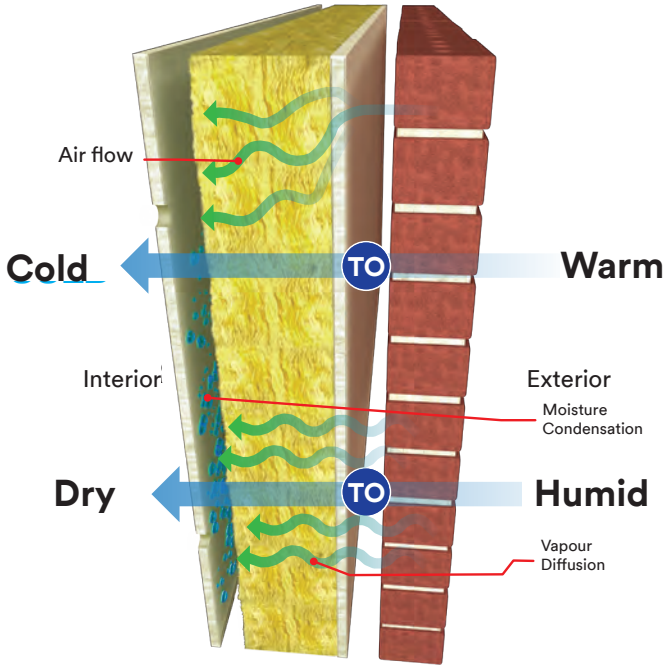
Ensuring you have the right air barrier for your new building project is important to the success of your project. Without an effective air barrier, uncontrolled air movement can cause condensation of moisture on cold surfaces (see image below) and can harm the long-term performance and durability of your building materials. It can also decrease indoor air quality, make your building less energy efficient and could negatively affect the health of the people inside the building.

Winter



In winter, warm, humid air moves naturally from building interiors to colder, drier exteriors. Without air barriers, moisture will condense on the colder, inside surface of the exterior wall.

Summer

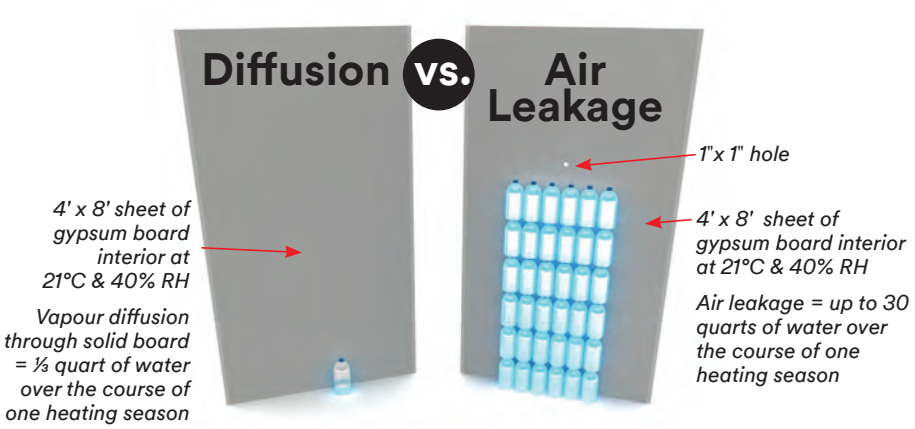


In summer, warm, humid air moves naturally from building exteriors to cooler, drier interior areas. Without proper air and vapour control, moisture will condense on the colder, inside surface of the interior wall.

Uncontrolled air flow can be a major problem, especially in cold weather.

It's been estimated that over the course of a heating season about one third of a litre of water can pass directly through gypsum board without a vapour retarder, and that 30 quarts of water can pass through the same gypsum wall with just a 1" x 1" hole in that same time period.[1]

[1]Builder's Guide to Cold Climates, Joseph Lstiburek



Solve construction-related environmental challenges with the right air barrier.

Modern buildings can be affected by many environmental challenges that can significantly affect their performance.

Wind pressure. The forces of wind on a building can be broken down into two categories: positive (windward) pressure tries to push air into the building and negative (leeward) pressure tries to draw air out of the building, most commonly through gaps and openings within the structure.

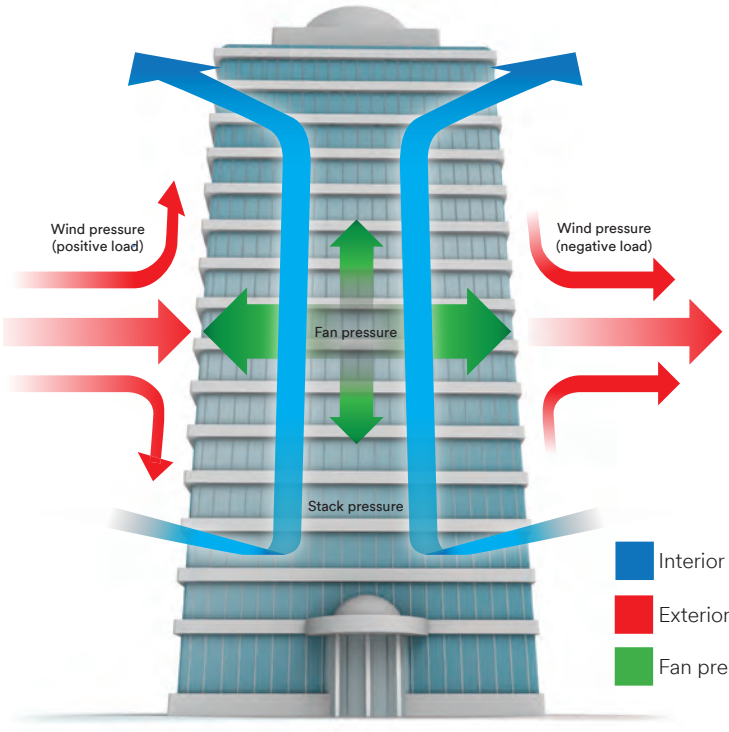
Fan pressurization. Mechanical heating, ventilation, and air conditioning (HVAC) systems are designed to create air movement within a building. The supply side of the system helps create positive pressure that delivers conditioned air to the desired locations, while the return side and exhaust vents recycle and remove air, creating negative pressure. These systems must be balanced in order to perform properly.

Stack pressure. Air density is related to air temperature. As air temperature warms, it becomes lighter and rises. The opposite is also true. As air temperature cools, it becomes denser and falls. A classic example of this action is a hot air balloon.

Barometric cycling. Air pressure changes due to the weather. High pressure is associated with nice weather while low pressure is associated with inclement weather. This is typically not an issue inside buildings except when there are rapid pressure drops, such as those that can result in tornadoes. The rapid pressure changes between the interior and exterior can cause windows to blow out, as the building pressure tries to balance itself with the ambient conditions.

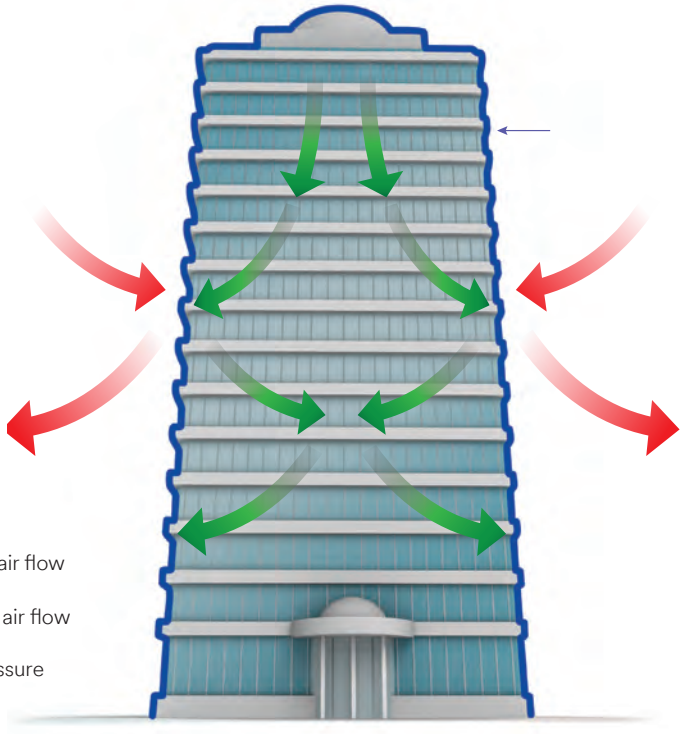
Thermal cycling. All construction materials shrink with cold and expand with heat over the 24-hour period from the cool of the night to the heat of the day. Materials are either extracting or emitting heat or cold, which causes the building HVAC system to respond in order to maintain the desired temperature.

Common environmental challenges of buildings.



Typical building without an air barrier system.

A continuous air barrier helps maximize building efficiency.



Building with a continuous air barrier system.

The power to choose the right air barrier system each time, every time.

Depending on their material characteristics, air barriers can help control or block the passage of water vapour.

Vapour-Permeable Air Barriers
Air barriers are permeable systems that allow vapour transmission through a wall assembly. The perm rating is typically greater than 10 (“perm rating” is a measure of the diffusion of water vapour through a material).

Air and Vapour Barriers
These non-permeable systems stop air and moisture transmission through the wall assembly. They typically have a perm rating of less than 1.0.

Choosing the right air barrier system is dependent on the kind of wall assembly you are constructing (the primary driver), your climate location (secondary driver), and your goals for sustainable construction.

Once you have selected a wall assembly design, the application temperature and weather conditions will determine the best barrier type. For example, cold or wet weather may eliminate some coatings and sheet membrane systems from consideration.

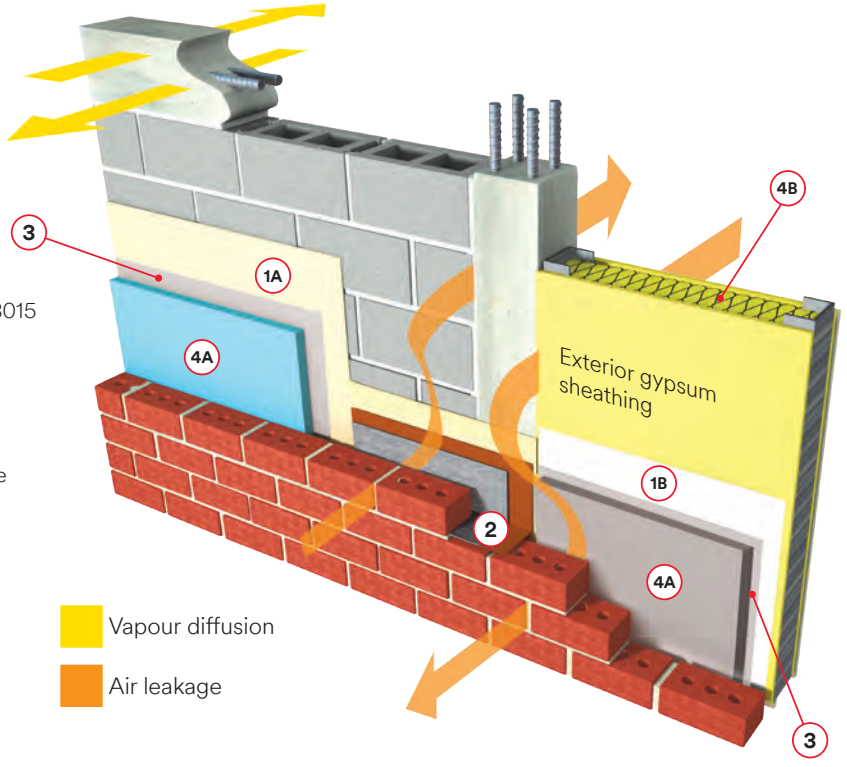
Maximize your building efficiency.

Protecting buildings with a continuous 3M™ Air Barrier System could help provide a wide range of benefits, including

- Better indoor air quality
- Less risk of mould and mildew compared to most traditional air barrier systems
- Happier, healthier residents
- Extended service life and durability of your building
- Energy savings through the reduction of unintended air movement

An air barrier system is a sheet or spray-applied membrane. It is designed to help control the unintended movement of air flow into and out of the building enclosure.

- **1A** 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015
- **1B** 3M™ Vapour Permeable Air Barrier 3015VP
- **2** 3M™ Through Wall Flashing Membrane 3015TWF
- **3** 3M™ Scotch-Weld™ HoldFast 70 Cylinder Spray Adhesive
- **4A** Continuous insulation
- **4B** Fibreglass batt insulation



Control airflow with confidence.

3M™ Non-Permeable Air and Vapour Barrier Membrane 3015

Using advanced technology to reduce air leakage and uncontrolled airflow can have a positive impact on your bottom line. The 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015 is a self-adhered membrane engineered to help you do just that. It helps prevent moisture ingress and helps improve indoor air quality. Among other features, air barrier designs ensure that the air temperature curve within the wall assembly is always higher than the dew point temperature curve. Read below about how 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015 can help protect the health of your building.

No primer required.* Pressure-sensitive adhesive technology eliminates the time and materials usually required for applying air barriers.

Compatible with common construction materials and sealants. The special adhesive sticks well to concrete, concrete block, anodized aluminum, galvanized metal, plywood, extruded polystyrene and most exterior gypsum sheathing. It is compatible with a wide range of common sealants, including synthetic rubber, butyl, polyurethane, silicone and silane-terminated hybrid sealants.

Hot and cold temperature application. Apply 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015 in temperatures as high as 66°C (150°F) or as low as -18°C (0°F).

Self-seals if penetrated. Seals around nails and staples to further reduce moisture intrusion. It passes ASTM D1970 both before and after thermal cycling.

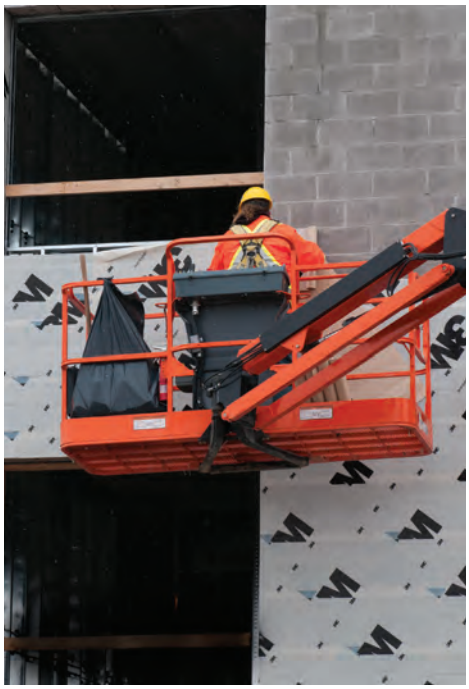
Flexible. Flexible enough to fit into corners, under siding and around curved surfaces.

Lightweight and easy to use. A standard 36" roll of 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015 weighs 9.5 kilograms, yet it outperforms thicker, competitive membranes weighing up to three times more!

Class A Fire Rating. The flame spread rating of 3M™ Non-Permeable Air and Vapour Barrier Membrane 3015 is much lower than competitive bitumen-based membranes.

UV resistant up to 12 months

Non-permeable. U.S. perm rating = 0.14 per ASTM E96 (desiccant method).



*No primer required on most construction surfaces.

Waves of acrylic adhesive.

3M™ Vapour Permeable Air Barrier 3015VP

Engineered to make air barrier application simple and fast, this vapour-permeable barrier is more effective for helping control indoor climate.

yet it outperforms thicker, competitive membranes weighing up to two times more! Additionally, the reverse wound roll increases the ease of installation and productivity.

Hot and cold temperature application. Apply 3M™ Vapour Permeable Air Barrier 3015 VP in temperatures as high as 66°C (150°F) or as low as -18°C (0°F).

Self-seals if penetrated. Seals around nails and staples to further reduce moisture intrusion. It passes ASTM D1970 both before and after thermal cycling.

Tough and flexible. Flexible enough to fit into corners, under siding and around curved surfaces–tough enough to resist punctures and tears.

UV resistance up to 12 months.

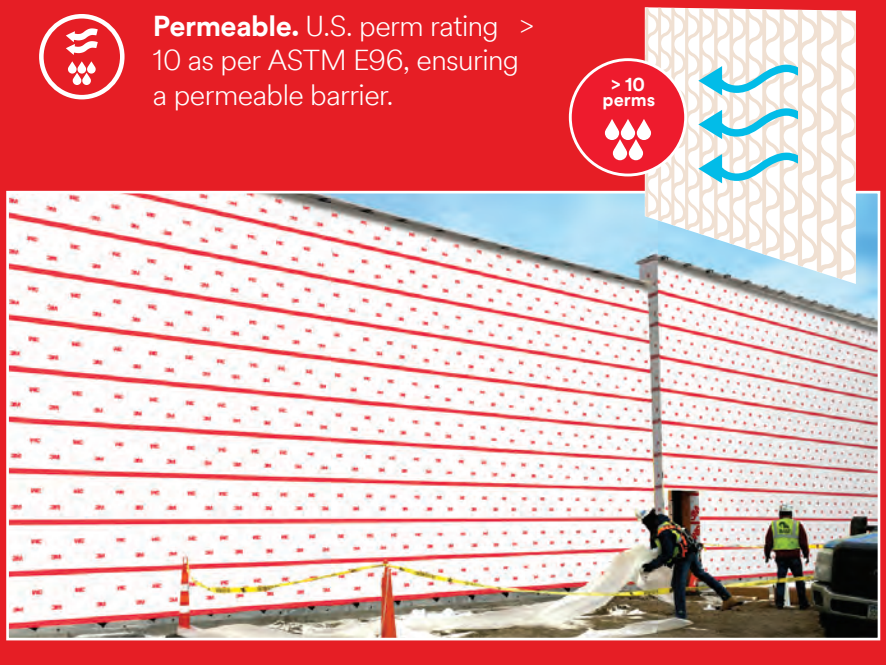
Compatible with other 3M building and construction market products. 3M™ Vapour Permeable Air Barrier 3015VP for detailing and combining with 3M™ Polyurethane Sealant 540 helps provide a complete air barrier assembly (Tested to CAN/ULC S742).

No primer required.* Pressure-sensitive adhesive technology helps eliminate the time and materials usually required for applying air barriers.

Reverse wound rolls. We know application of membranes can be a back-breaking task. The adhesive is on the outside of the 3M™ Vapour Permeable Air Barrier 3015 VP. Application is as easy as sticking the roll to the wall and rolling it out.

Lightweight and easy to use. A standard 30" roll of 3M™ Vapour Permeable Air Barrier 3015 VP weighs two kilograms

Permeable. U.S. perm rating > 10 as per ASTM E96, ensuring a permeable barrier.



*No primer required on most construction surfaces.

The easiest decision you will make today.

3M™ Through Wall Flashing Membrane 3015TWF

Easy to apply.
Comes on an easy-to-handle roll that can be applied in just one step by a single applicator.

Hot and cold temperature application. Apply 3M™ Through Wall Flashing Tape 3015TWF in temperatures as high as 66°C (150°F) or as low as -18°C (0°F).

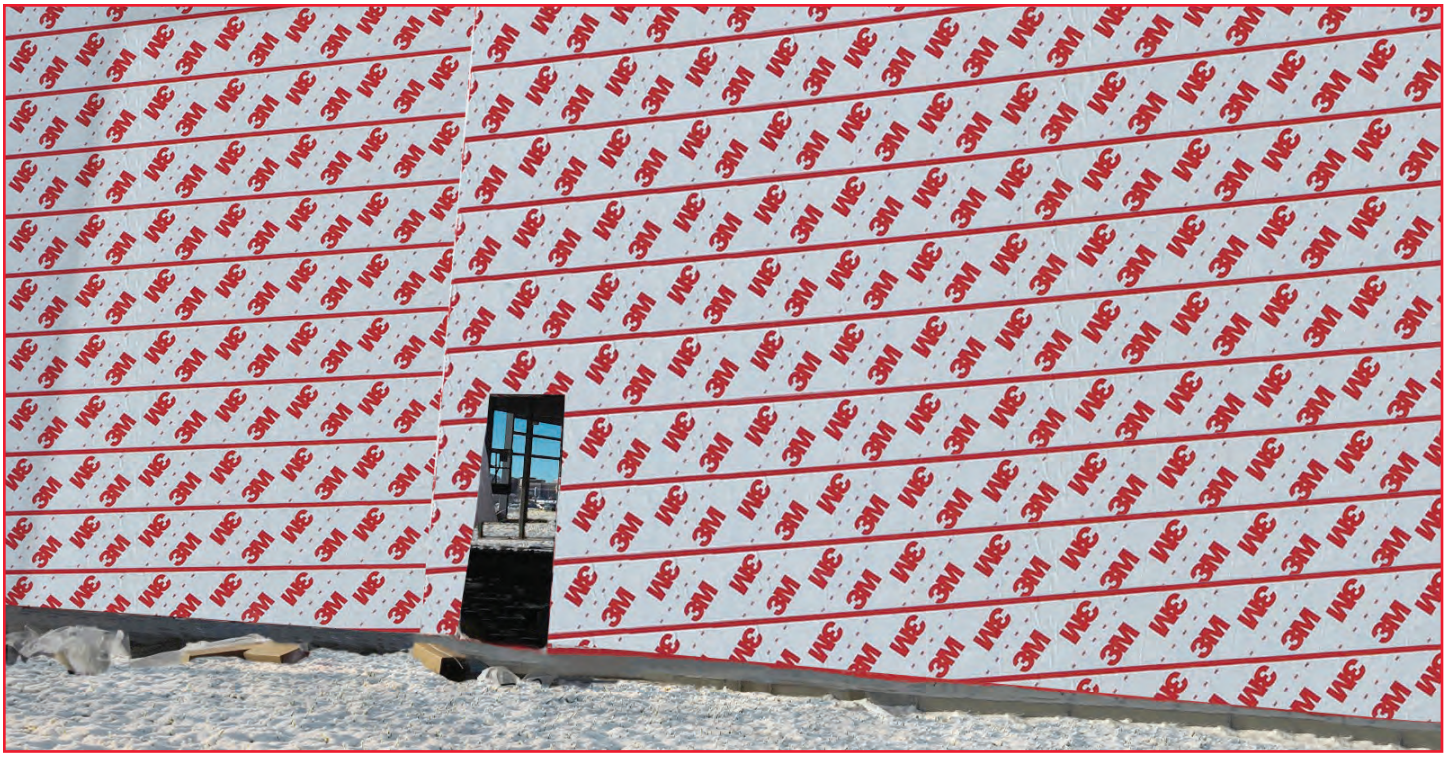
Durable membrane designed to withstand wear and tear.
This product is tough enough to resist punctures and tears. The patented acrylic-based adhesive can stick to a wide range of building materials, from concrete to metal to wood–even when they're damp.

Compatible with other 3M building and construction market products. 3M™ Vapour Permeable Air Barrier 3015VP for detailing and combining with 3M™ Polyurethane Sealant 540 helps provide a complete air barrier assembly (Tested to CAN/ULC S742).

No primer required.* You can almost forget budgeting time and money for preparation and clean-up at the job site! 3M™ Through Wall Flashing 3015 TWF requires no primer. Walk into and out of the job site without thinking of primer-related spills and mess.

UV resistant up to 24 months.

*No primer required on most construction surfaces.



3M™ Vapour Permeable Air Barrier 3015VP

- 30" x 75'
- 15" x 75'

3M™ Through Wall Flashing Membrane 3015TWF

- 4" x 75'
- 6" x 75'
- 9" x 75'
- 12" x 75'
- 16" x 75'
- 18" x 75'

3M™ Non-Permeable Air and Vapour Barrier Membrane 3015

- 2⅜" x 75'
- 4" x 75'
- 6" x 75'
- 9" x 75'
- 12" x 75'
- 18" x 75'
- 36" x 75'
- 48" x 75'

Learn about 3M's advanced technologies for controlling airflow and optimizing the indoor climate at **3M.ca/buildingenvelope** or contact your 3M representative at 1-888-364-3577.

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For technical claims and further information, please contact your 3M representative.