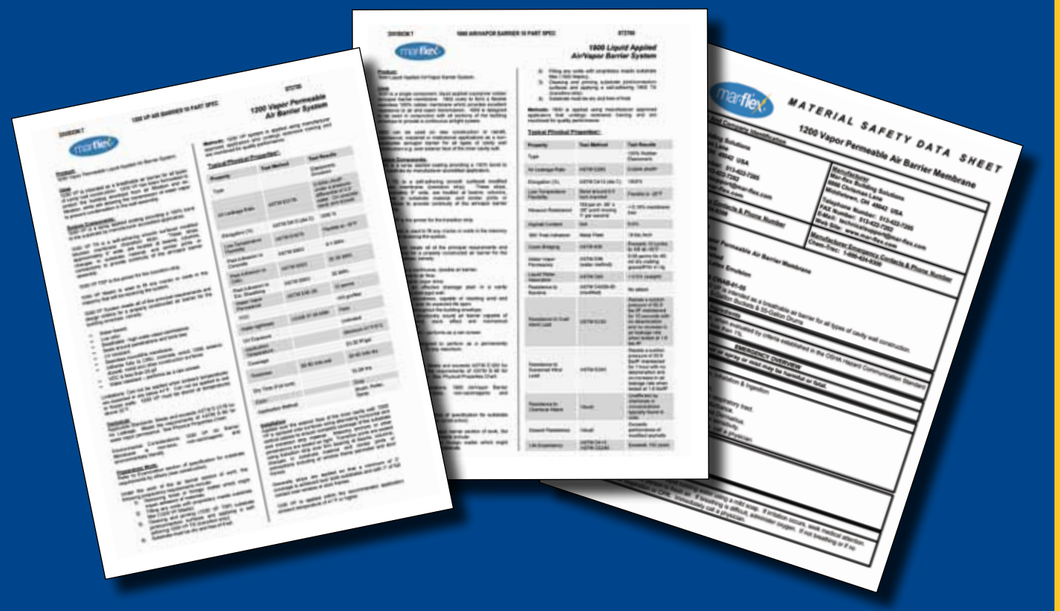

For 3-Part and 10-Part Specifications and MSDS sheets, call 1.800.498.1411 or contact technicalsupport@mar-flex.com

marflex®

Building Solutions

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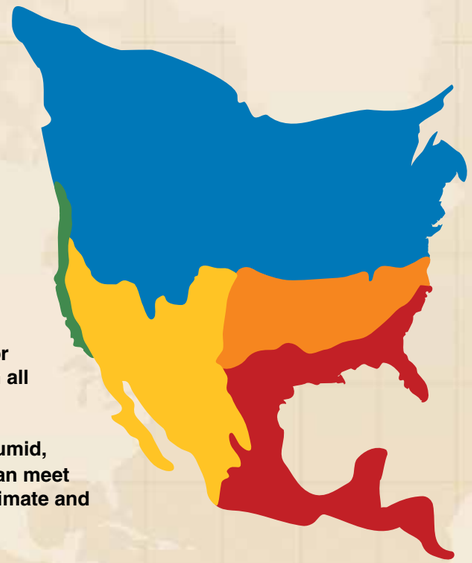
Marflex Building Solutions

Air Barrier Systems

Vapor-Permeable and Non-Permeable Air Barrier Systems

MARINE
The concern is heavy rain and humidity that can become trapped inside wall assemblies.

HOT-DRY & MIXED-DRY
The concern is intense solar cycles that draw conditioned air outside, costing energy.



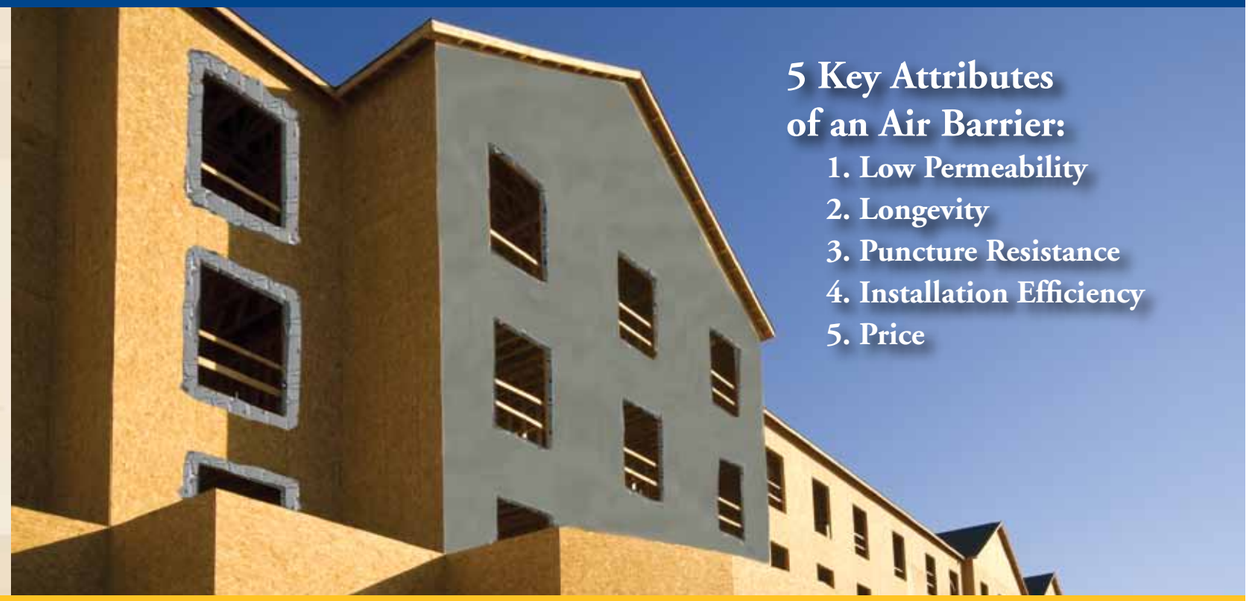
COLD
The concern is warm, moist air that can infiltrate the building envelope and attach to cold surfaces.

MIXED-HUMID
The concern is moisture-laden air that can contact cold surfaces inside and outside.

HOT-HUMID
The concern is moisture-laden air that can infiltrate the building and increase cooling loads.

Air movement and water vapor related problems can occur in all climatic environments.

From bitter cold, to hot and humid, Marflex Air Barrier systems can meet the needs of virtually every climate and building application.



Different climates require different barrier systems. That's where Marflex Air Barriers excel.

Why Marflex? Continuity. Support. Impermeability. Durability.

The majority of problems a building endures are due to moisture, and its impact on the degradation of components.

When moisture enters a building envelope via air leakage and then fluctuates with different temperatures and time periods, it can rot envelope components, rust and decay structural supports, and damage exterior finishes.

It is estimated that 90% of damage to buildings is caused by moisture.

Marflex Building Solutions is committed to demystifying the proper use of air barriers, and air/vapor barriers, to assure the proper installation of building envelopes that are effective, efficient, and green.

The Airtight Building

The optimum air tight building is designed to control the quality of the internal environment while conserving the energy required to heat and cool it.

With the proper level of tightness, lower rated air handling equipment can be installed to meet lessened demands, so initial expenditure is reduced. These efficiencies add value to the building making it more attractive to the developer, and tenants.

Saving Energy and Money

The National Institute of Standards and Technology (NIST) reported in 2005 that air barrier systems in four sampled buildings reduced air leakage up to 83 percent, raising gas savings more than 40 percent, and electrical savings more than 25 percent.

Moisture Restriction Combats Mold

Mold growth in an indoor environment is typically related to an indoor water or moisture problem. Various practices can be followed to mitigate mold issues in buildings, the most important of which is to reduce moisture levels that can facilitate mold growth.

LEED Buildings Benefit Us All

Compared to conventional "built to code" buildings, LEED (The Leadership in Energy and Environmental Design) certified buildings have healthier work and living environments that contribute to improved productivity, health and comfort.

An Air Barrier System from Marflex may contribute a possible thirteen (13) points toward LEED® certification for new construction under the following categories:

- EA Credit 1 – Optimize Energy Performance (1-10 points)
- MR Credit 5.1 – Regional Materials: 10% Extracted, Processed and Manufactured Regionally (1 point)
- MR Credit 5.2 – Regional Materials: 20% Extracted, Processed and Manufactured Regionally (1 point in addition to MR Credit 5.1)
- EQ Credit 7.1 – Thermal Comfort: Design (1 point)

The most important features of an air barrier system in a building are – continuity … structural support … air impermeability … and durability.

- **Continuity** – each component (walls, windows, foundation and roof) must all be interconnected to prevent air leakage at the joints between materials, components, assemblies and systems.

- **Support** – effective structural support requires that any component of the air barrier system must resist the structural loads that are imposed by wind, stack effect, and HVAC pressures without rupture, displacement or undue deflection.

- **Impermeability** – materials chosen to be part of the air barrier system should be chosen with care to avoid selecting materials that are too air-permeable.

- **Durability** – materials selected for the air barrier system must perform their function for the expected life of the structure. Otherwise, they must be accessible for periodic maintenance.

Marflex AIR Barrier 1200 VP

Marflex AIR Barrier 1200 VP vapor permeable air barrier system is designed to stop air infiltration and exfiltration in the building envelope while allowing the transmission of water vapor preventing condensation in the wall assembly. Marflex AIR Barrier 1200 VP acrylic membrane adheres fully to CMU, concrete, exterior sheathing and most other building materials.

- Acts as an air and rain barrier
- Allows the diffusion of vapor
- Fluid applied
- Position anywhere in the wall assembly
- Unlimited UV Exposure
- High vapor permeance (greater than 12.0 perms)
- Not a vapor barrier
- Watertight

Marflex AIR & VAPOR Barrier 1800

Marflex AIR & VAPOR Barrier 1800 provides a seamless, 100% rubber continuous membrane around the building envelope. It is impermeable to air and vapor transmission. It can be spray applied directly to concrete, CMU and exterior drywall.

- Acts as an air, vapor and rain barrier
- Very low vapor permeance (less than 0.08 perms)
- Watertight
- Position in wall assembly to prevent moisture condensation

Air Barrier Systems

marflex Building Solutions

PRODUCT	AIR Barrier 1200 VP	AIR & VAPOR Barrier 1800
Type	Elastomeric Emulsion Water-Based	100% Rubber Polymer Solvent-Based
Features	• **Breathable** • Low odor • High water vapor-permeance • Low VOC content • Can be applied to damp (or green) concrete • Seals around penetrations and brick ties • Seamless monolithic membrane	• **Non-Breathable** • Can be applied to damp (or green concrete) • Excellent elongation and recovery • Seals around penetrations and brick ties • Seamless monolithic membrane
Air Barrier	Yes	Yes
Vapor Barrier	No	Yes
Air Leakage	< 0.004 CFM/ft² ASTM E2178	< 0.0004 CFM/ft² ASTM E283
Vapor Permeance ASTM E96	12.0 perms	0.08 perms
WaterTightness CGSB 37.58-M86	Pass	Pass
Elongation ASTM D412	1200%	1800%
UV Exposure	Unlimited	30 Days
Application Temperature	Minimum 41˚ F / 5˚C	Minimum 15˚F / -9˚C
Coverage (621-627 Tip Recommended)	55-65 ft²/gal = 20 mil dry thickness	45-65 ft²/gal = 20 mil dry thickness
Dry Time	12-24 hours	12 hours
Color	Gray	Gray
Application Method	Brush, Roller, Spray	Brush, Roller, Spray

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Controlling Air Leakage and Air Flow reduces moisture. It improves indoor air quality and energy efficiency, too.

Air Barriers

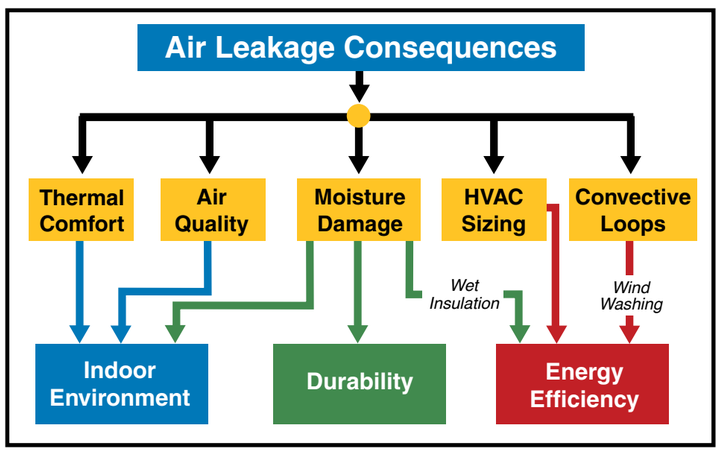
An air barrier restricts and controls the amount of air flow and leakage *through* a material. By controlling the amount of air leakage, a building's functions, and its life span, can be greatly improved. Sheetrock, cinder block, building felt and building wrap are not effective air barriers, due to their inability to control the air leakage. Water vapor may be transported by air leakage, but you control the rate of flow by installing a proper air barrier. Air barriers can be placed anywhere in a building envelope.

Air/Vapor Barriers

At times, a material can be deemed both an air and a vapor barrier, or an air/vapor barrier. In such cases, the material is designed to stop both the movement of air and vapor diffusion. Like vapor barriers, an Air/Vapor Barrier is designed to be installed on the warm side of a building's insulation.

A Growing Requirement

- US Government Agencies now require air barriers on federally funded building projects.
- Several states now include air barrier requirements in their building codes.
- Massachusetts Energy code, adopted in 2001, requires a continuous air barrier for commercial buildings.
- The US Department of Energy has stated that up to 40% of the energy used to heat and cool a building is due to uncontrolled air leakage.
- The US Department of Energy has instituted a program with a goal to reduce building energy consumption 25% by 2010 and 50% by 2020.



Managing Infiltration and Exfiltration improves a building's durability and improves the environment.

The simple truth about Air; it moves from Warm to Cold.

Air leakage in a building envelope is caused by differences in air pressure, always flowing in or out.

Air leakage refers to the unplanned, unpredictable and unintentional airflow in or out of buildings, and must be distinguished from the intentional and, ideally, controlled flow of outdoor air into a building via either a mechanical or ventilation system.

- **INFILTRATION is caused when a higher pressure outside forces air through walls and into a building.**
- **EXFILTRATION is caused when higher pressure inside forces air out of a building.**

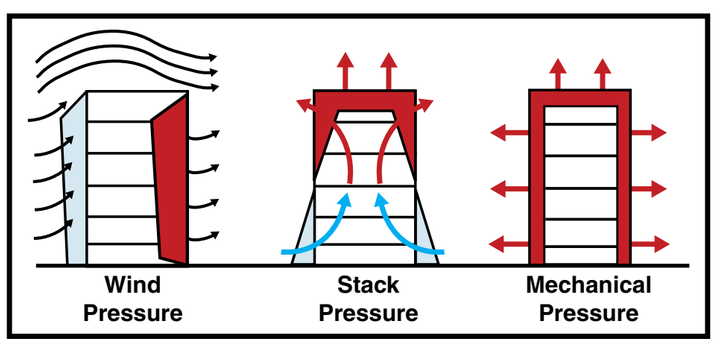
In order for air leakage to occur, there must be a driving force and a pathway. The three major air pressures that cause infiltration and exfiltration are wind pressure … stack pressure … and mechanical pressure.

Wind Pressure

Wind pressure tends to pressurize a building positively on the facade it is hitting, and then cavitates and speeds up as it rounds corners, creating strong negative pressure at the corners and weaker negative pressure on the rest of the building surfaces. The average annual wind pressure on buildings across the U.S. is about 10-15 mph (0.2-0.3psf) (10-14 Pa).

Stack Pressure

Stack pressure (or chimney effect) results from warmer air inside having a lower density than the cooler air outside. This difference in density creates a slight outward positive pressure at the top of a building, and a slight inward negative pressure at the base. The reverse occurs in warm climates with air-conditioning.



Mechanical Pressure

HVAC fans cause pressurization, usually positive, which is fine in warm climates but can add to wind and stack pressures in heating climates. Small air pressure differences can be significant and should be recognized during the design of a building envelope. Under sustained pressures, some building materials may be forced out at joints, or come apart at seams.

Moisture transport by air leakage is estimated to be 60 times greater than transport of moisture by diffusion.

The general principle for the placement of an air barrier is that air moves from the warm side to the cold side. It is always desirable to promote drying of the wall cavity in one or both directions.

7 Reasons Why Architects Specify Air Barrier Systems:

1. Reduction in moisture problems
2. Improvement in indoor air quality
3. Lower heating and cooling costs
4. Lessened greenhouse gas production
5. Increased acoustical isolation
6. Isolated indoor environments
7. Sustainable, more-durable buildings

Buildings in cold climates should have all construction cavities breathing to the outside where possible, allowing warm humid air to move toward the cold air outside.

If the air barrier is also functioning as the primary vapor barrier, it must be positioned on the warm-in-winter side of the insulating layer.

Permeable Air Barriers, if vapor-permeable, can be installed anywhere in the wall assembly, offering the designer more design flexibility.

There should never be two vapor barriers within a wall assembly.