Air Barriers: The Latest Tool in Moisture Control

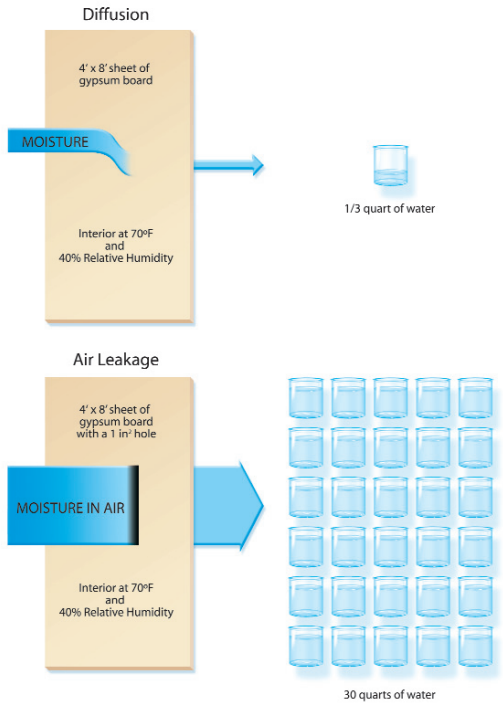
Giving builders greater control over air leakage

Moisture protection at the building envelope is one of the most misunderstood aspects of building construction. Traditionally the construction industry has focused on blocking water and vapor from entering and getting trapped in the external wall assembly. But recent theories suggest that there's a third culprit in the moisture intrusion mystery—air.

UNSEEN SOURCE OF MOISTURE

Under most circumstances, the dominant mechanism for water vapor transport is air leakage while vapor diffusion is relatively minor. The Energy & Environmental Building Association (EEBA) tested moisture movement through a 4'x8' sheet of gypsum board and discovered that as much as 30 quarts of water is carried through the air via a 1 in^2 hole. Only 1/3 quart of water moves through the gypsum board via diffusion (movement of fluid from an area of higher concentration to an area of lower concentration).

MOISTURE TRANSPORT VIA DIFFUSION vs. MOISTURE TRANSPORT VIA AIR LEAKAGE



If allowed to pass freely through a building's envelope, moisture-laden air can cause condensation on internal wall system components, which can lead to moisture problems like mold.

To combat the effects of moisture damage, designers are specifying the installation of air barriers in conjunction with water-resistant barriers and (where required by climate zone and other conditions) vapor barriers. These three systems can be confused; however the very specific functions and uses of each must be carefully considered.

WATER-RESISTIVE BARRIERS, or moisture barriers, keep liquid water from entering or exiting the building enclosure.

VAPOR BARRIERS, or vapor retarders, control the molecular diffusion of water vapor molecules through the actual material. They are not recommended in all climate zones.

AIR BARRIERS create a near-airtight seal around all six sides of the home (floor, walls, and roof) to restrict the passage of air – and the moisture carried with it – through the building envelope.

When builders get the air barrier right, the homeowner will find that the benefits go beyond protection against moisture and related problems. Air barriers can also improve thermal comfort, HVAC performance, indoor air quality, and energy efficiency.

ICYNENE® AIR-SEALS TO DELIVER ADVANCED MOISTURE MANAGEMENT

Icynene® soft foam insulation has passed third party testing that confirms its performance as an air barrier when applied at only one inch thickness. This is especially notable because other open-cell foams generally require an application of 5.5 inches to pass the minimum air permeance rate.[1]

Icynene® gives builders greater control over air leakage so they can address what matters most to potential home buyers.

1. **ENERGY EFFICIENCY** Icynene® works as an insulation and air barrier to keep the home warm in the winter and cool in the summer. It also allows for rightsizing of the mechanical system and can save homeowners up to 50% in heating and cooling costs.

2. **MOISTURE MANAGEMENT** As a qualified air barrier, Icynene® helps reduce the movement of airborne moisture through the building envelope along with potential problems such as mold growth.

3. **INDOOR AIR QUALITY (IAQ)** 100% water-blown and environmentally-friendly, Icynene® helps create an indoor environment without drafts while it reduces airborne sounds and the intrusion of outdoor allergens, odors and pollutants. Combined with proper mechanical ventilation, occupants can control the quality of air they breathe.

The Icynene Insulation System®
Healthier, Quieter, More Energy Efficient®

For more information or to contact your local Icynene Licensed Dealer, visit **Icynene.com/airsealing.aspx**

[1]Tests conducted in accordance with ASTM E2178-03.