

BUILDING AN ENERGY EFFICIENT ENVELOPE 8

THIRD PARTY TESTING

In response to the demand for more energy efficient, durable and healthier homes, builders and designers now have an innovative yet proven system called AIRTIGHT SPRAYFOAM® to create a superior building envelope to act as the basic building block to meet that demand.

CAN YOU BUILD A HOUSE TOO TIGHT?

Americans spend 80% of their time indoors. Due to this fact our goal is to provide a home with the four essential construction components that distinguish an energy efficient, safe home from the rest. These four elements are indoor air quality control, moisture control, operational cost control and durability. Control of the building envelope affords the owner the ability to control his or her own environment. That ability begins with a solid, airtight exterior shell of the building. You must build tight, insulate and ventilate right.

WATER, AIR, MOISTURE (WAM) BARRIERS

Liquid water problems in buildings are due mainly to significant imperfections in the cladding, flashing detail, leaking roofs or poor site drainage. A "drainage plane" or rain screen interior of the cladding can minimize water entry into the wall system caused by wind, capillarity, gravity and air pressure differences. AIRTIGHT SPRAYFOAM® applied to the interior of the drainage plane, cladding or in the facade/block interstitial space in CBS construction acts as a continuous second line of defense against the intrusion of the most dangerous form of moisture: liquid water.

Airflow also carries moisture, which will impact the indoor environment. Movement of moist air into the building envelope driven by temperature and pressure differences will allow growth of pathogens and allergens in the stud cavities. This moisture and air movement will also degrade thermal performance of fibrous or large open celled insulation by up to 50% and could affect the structural integrity of the building in a relatively short time period.

Section 5.4 of the Canadian National Building Code has established

performance criteria for any material to act as an air flow barrier and contains permeance performance standards under wind loading of 75 Pa of air pressure. Wall details were constructed using various sheathing and interior finishes commonly found in residential construction. These assemblies were sprayed with foam and then tested for air infiltration under both positive and negative, static and dynamic air pressures simulating constant and gusting wind loads. Even when the fiberboard sheathing was pulled off the studs of one of the assemblies under high wind loads, the closed cell polyurethane continued to meet the air infiltration performance standard.

AIRTIGHT SPRAYFOAM® in framed walls will significantly simplify the construction process by performing multiple roles in the building envelope with one application. Tested under actual field conditions, AIRTIGHT SPRAYFOAM® has proven that in one application, it satisfies the performance criteria required to act as an air infiltration barrier and a vapor and water retarder. AIRTIGHT SPRAYFOAM® provides the homeowner with the continuous airtight construction that is essential to controlling moisture and airflow, which will lower operational costs, allow better management of indoor air quality and enhance the durability and value of the home.

BUILDING: CODES AND EXPECTATIONS

In many communities local building codes may dictate other applications or variations on the approach described here. The building code exists to insure that accepted construction practices are followed and certain minimums in performance standards are met. They also exist to benchmark innovative applications and concepts to make sure buildings are built safely with sound construction technique.

