

Wall Assembly Performance in Mixed Humid Climates

**NAHB FIELD TEST ASSEMBLIES**

When designing a building envelope, architects and contractors must consider the regional climate in order to maximize moisture control strategies. A building's wall assembly is the first place to fortify a defense against moisture. With buildings being constructed tighter and more energy efficient, air sealing measures and additional insulation in exterior wall cavities create colder wall sheathing which is less able to dry naturally when it becomes wet. This makes the design of the wall assembly vitally

important, not only to keep moisture from getting into the exterior walls, but also to allow the escape or dissipation of any moisture that penetrates the wall assembly.

The NAHB Research Center (a subsidiary of the National Association of Home Builders) recently completed a twenty-two month field study, *Effect of Cladding Systems on Moisture Performance of Wood-Framed Walls in a Mixed-Humid Climate*, to determine the most effective exterior cladding systems to help avoid excess moisture in exterior walls. Nine different north and south oriented wood framed wall assemblies were tested, including vinyl siding, fiber cement, stucco, brick and insulated vinyl siding, which included contoured EPS placed behind the exterior surface of the vinyl siding panel. The assemblies represent roughly 90% of the primary claddings used in new construction. The study revealed EPS insulated siding proved the best of all nine claddings tested, maintaining the lowest all-around sheathing moisture content value.

The study was conducted on the NAHB Research Center campus in Maryland, a mixed humid climate. The mixed humid climate has unique conditions, which typically includes moisture migration from the inside of a structure during the winter and from the outside during the summer. These dynamic

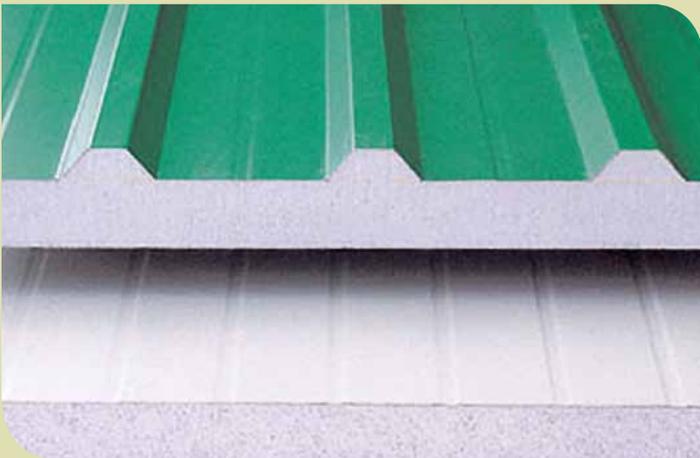
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- “Insulated siding provides both thermal and hygrothermal benefits in light framed wall construction. The thermal resistance of insulated siding provides a double benefit: reduced heat flow in the wall assembly, thereby saving energy, and a higher wall cavity temperature, resulting in increased drying capacity.”
- The full test report states that “moisture issues such as mold and rot, especially in exterior walls, have become a growing concern in residential construction, particularly as building envelopes have become tighter and have incorporated higher levels of thermal insulation as a result

of more stringent energy codes and a growing demand for comfortable and energy-efficient homes.”

For more information on EPS insulated vinyl siding see [EPSMA's online member directory](#). ■

EPS Manufacturing State of the Art & Streamlined



The EPS industry has always been on the cutting edge of manufacturing efficiency. [Styro-Tek](#), a custom laminator of expanded polystyrene insulated panels, recently streamlined their manufacturing process when they relocated their lamination plant to their corporate headquarters in Birmingham, Alabama. The company simplified operations and consolidated its production processes under one roof. The move enabled Styro-Tek to design a new plant layout for its innovative manufacturing equipment, which improved their production flow, eliminated wasted space and increased operation efficiencies. Incorporating state-of-the-art computerized cutting equipment ensures product accuracy. The result? Less errors and product waste.

Versatility, cost effectiveness and lasting value make EPS ideal for a variety of wall and roof constructions. With its outstanding resistance to moisture absorption, EPS insulation provides dependable, long-term performance for interior and exterior construction applications. In addition to aesthetics, laminated EPS panels contribute to a structure's insulation and sound deadening properties. Bonded under pressure, laminated EPS panels can withstand a wide range of environmental conditions. Panels are available laminated on one side or both sides and can be custom cut to any design specification.

There's virtually no limit to laminated EPS applications, including insulated wall and roof panels, signage, service station canopy panels and architectural EPS shapes for schools, hospitals, airports, churches, residential homes and businesses. Exterior coverings for structural insulated panels (SIPS) are available in both stucco embossed aluminum, smooth textured aluminum and smooth textured fiberglass skins. Fiberglass reinforced panels (FRP) are commonly used walk-in coolers, clean rooms and public restrooms. Rigid, scrubbable and fire resistant, FRP's are easy to maintain. Styro-Tek uses an EnergyStar qualified textured polyester paint on its panels that is available in a variety of colors.

By investing in technology and lean manufacturing, the EPS industry is exceeding environmental expectations through reduced waste and increased efficiency. ■