



HANOVER HOMES
NORTH CORPORATION

1-800-999-2066

1333 Route 315
Wilkes-Barre, PA 18702
www.HanoverHomes.com

OSB Swells Unendingly, Researchers Find

How do plywood and OSB differ in their response to water and water vapor? Many builders may think that they already know the answer, but a recent study by researchers at the National Research Council Canada yielded some hard information on the subject.

In the realm of the obvious, the research team took careful measurements that confirmed that OSB swells significantly when wet, and that swelling occurs most rapidly at unsealed cut edges. But they were somewhat surprised at its reaction to repeated wetting and drying.

“I thought at the start that the thickness would increase for a few cycles of wetting and drying and then level off,” says study co-author Mostafa Nofal. In fact, it did not. The thickness of the OSB samples continued to increase with each cycle of wetting and drying for as long as the process was repeated, or about 15 cycles. Each cycle up to the tenth was also found to increase the material’s readiness to absorb water. During the first cycle, 24 hours of exposure to water was needed to bring the samples to a 15% moisture content. By the third cycle, the time had been reduced to 30 minutes, and to 15 minutes by the fifth.

Despite OSB’s readiness to absorb liquid water, the National Research Council Canada team determined that it is about 100 times less permeable to water vapor than plywood. When laboratory dishes partially filled with water were set upright and sealed at the mouth with samples of the two panel materials, the water evaporated from the dishes capped with plywood. The OSB-covered dishes, by contrast, still held water eight months later. Interestingly, the undersides of all of the OSB samples in the vapor permeability test developed mold growth, while fewer of the plywood samples were affected.

Nofal speculates that OSB’s impermeability and apparent attractiveness to mold may be a factor in building envelope failures associated with EIFS. Although such failures have also occurred with plywood, Nofal observed that OSB failures tend to be more severe. “If you get liquid water inside the wall,” he says, “plywood will buy you some time as it dries out. OSB grows mold within a week.”

“Reprinted permission from Journal of Light Construction Magazine, October 2000.”

BUILDING