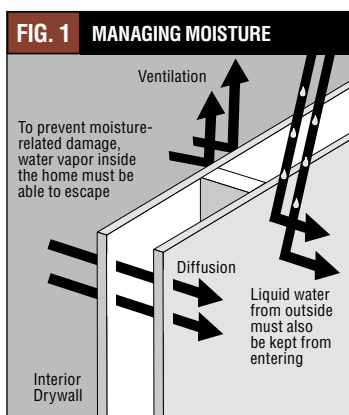


### The value of permeability

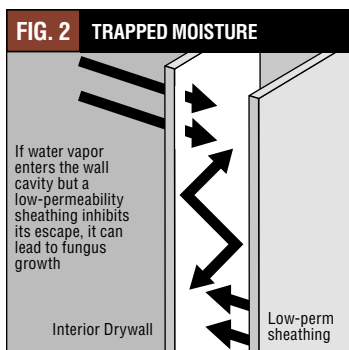
Moisture buildup in a home can lead to serious problems. That's because moisture is a breeding ground for mildew, mold and decay. And the damage they cause can be very expensive to repair, as much as ten times the cost of new construction. So instead of trying to repair mold damage, a better solution is to find a way to manage moisture.

Moisture, however, is everywhere. Inside a house as well as outside. It's generated by running water in bathrooms or the laundry or steam from cooking and dishwashing. It can migrate in from the outside due to high-moisture weather conditions. It's even produced by the home's occupants themselves. A family of four can actually generate up to ten gallons of water vapor a day.



### Managing moisture

A certain amount of moisture is necessary to make a living environment comfortable, but too much spells trouble. In a home, the air conditioning and ventilation systems are designed to dry and dissipate moisture so that it doesn't concentrate in any one area for long. This combined with nature's own mechanism for transferring or diffusing moisture from areas of highly saturated air to areas of less saturated air, provides the basis for a very workable moisture management strategy. (FIG. 1)



### Trapped Moisture

The problems begin when moisture is trapped in the wall. That often happens when construction techniques or material choices inhibit moisture movement through the outer wall structure. Some of the worst contributors to moisture entrapment are non-permeable exterior sheathing products. (FIG. 2)

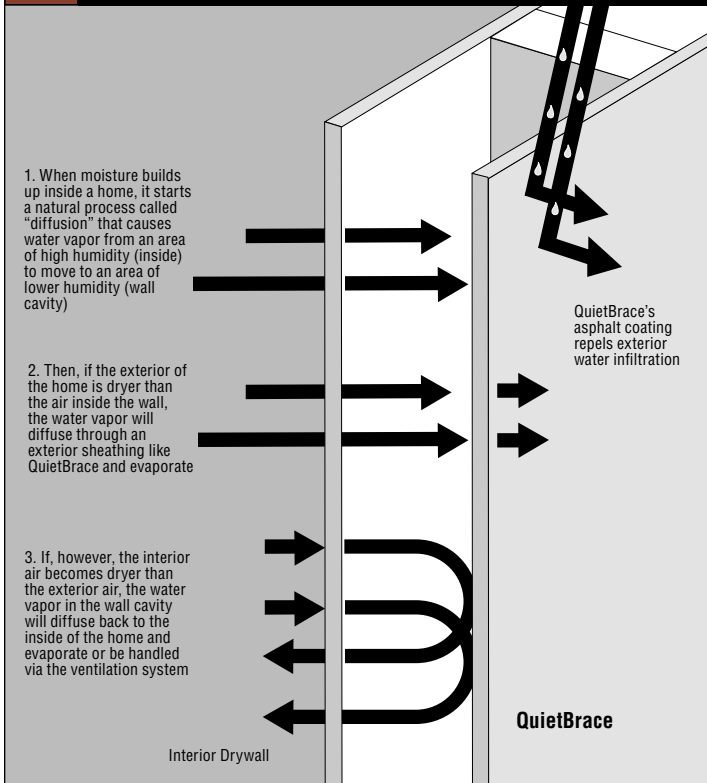
Materials like OSB or plywood are manufactured using glues and other binders that dramatically reduce their water vapor diffusion capacity. Foam insulations also create strong barriers to moisture's escape. When these products are applied to the exterior of the wall, excess moisture from inside the home enters the wall cavity and remains there until the interior air has dried sufficiently for it to reenter the interior and evaporate. The use of vapor barriers on the inside surface of the wall can help, but moisture will still penetrate into the wall if it finds even the smallest opening.

One key element in this strategy is the outer walls of a home. These walls must be designed to allow moisture vapor from inside the home to escape without allowing liquid water from outside to migrate in. It should work like this: moisture buildup within the home triggers the natural moisture diffusion process between the more-saturated air in the interior of the home and the less-saturated air in the space within the wall. This causes excess moisture to temporarily move into the wall cavity between the inside and outside surfaces.

Then, if the exterior environment is drier than the interior environment, the moisture within the wall diffuses through the outer wall surface and evaporates. If the interior humidity level drops, the moisture will diffuse out of the wall cavity and back into the interior where it will evaporate or be expelled via ventilation.

## QuietBrace™ Advantages

**FIG. 3 QUIETBRACE AND NATURAL MOISTURE MANAGEMENT**



That creates the perfect environment for mold growth because the wall cavity doesn't share the fresh air ventilation benefits of the home's forced-air system. Moisture can quickly go from very low concentrations to the 20% level where fungus can survive indefinitely to the 30% level where it thrives, creating the potential for negative health as well as structural concerns. (FIG. 2)

At the same time, QuietBrace's asphalt coating discourages air and water infiltration. QuietBrace also boasts a water-absorption measurement of less than 7%. OSB and plywood panels have higher water absorption rates. The reason that matters is that the less moisture a material absorbs the less chance there is for mold to grow.

### Permeability

In contrast, the use of a sheathing product like QuietBrace provides a truly permeable exterior wall surface, facilitating a reliable and efficient moisture release mechanism. Compared to OSB and plywood panels, its average of 8 to 9 perms is approximately 4 times higher. Its interknit wood fiber composition provides excellent strength while still allowing moisture a pathway of escape. (FIG. 3)

### In conclusion

*There are many considerations required to develop a comprehensive moisture management plan. The use of QuietBrace sound-deadening structural sheathing is an excellent first step. For even more suggestions, see the detailed permeability information on our website at [www.quietbrace.com](http://www.quietbrace.com) or give one of our technical experts a call.*

### WHAT ARE YOUR OPTIONS?

Material	Thickness	Water Vapor Permeability (perms at stated thickness) Range
Fiberboard Sheathing (asphalt impregnated)	1/2"	5 - 15
Plywood	3/8"	.75 - 3.5
OSB	3/8"	.75 - 2
Foil-faced PIR insulation	1"	.01 - .03
XPS rigid insulation	1"	1
EPS rigid insulation	1"	3.5

*Here is a comparison of the water vapor permeability of several popular sheathing materials. Because permeability can be affected by small changes in material, a range is typically given; and in cases where a single value is provided, it should be considered "representative".*