

## Advantages of Liquid Applied Air and Moisture Barrier Systems

By Ezio Fabrizi

In the recent decade, the building industry has become more aware of air leakage as a significant cause of condensation in wall assemblies. This condensation has been a significant factor in moisture damage to substrates, poor air quality and mold growth. This awareness has encouraged today's development in the latest generation of liquid applied air and moisture barriers. These new liquid applied systems are utilizing a seamless cohesive system to better seal the building envelope from air leakage and moisture intrusion. By creating an airtight building envelope, problems that can occur as a result of air leakage, such as corrosion, moisture related decay, mold growth and indoor poor air quality, are better defended.

Seamless liquid applied systems have physical characteristics and labor cost advantages that can clearly separate them from standard sheet good applications. Some of these characteristics include overall durability, UV-resistance, low flame spread and favorable smoke development ratings. Some advantages of the labor savings are the ability for these liquid applied systems to be installed utilizing low cost spray equipment in conjunction with trowel grade spread joint sealants and liquid flashings for seamless detailing at critical transitions and penetrations in the building envelope.

Sheet good membrane systems typically cost less per square foot for material. In straight forward applications with limited penetrations and/or brick ties, the total cost of sheet good membrane systems, including labor and materials, is often lower than liquid applied systems. However, when installing a sheet good system on a project that is not a straightforward application containing multiple penetrations, the labor cost will be greater than with the liquid applied systems. Sheet good applications on these projects are time consuming because the applicator is forced to cut sheets around the ties and penetrations with careful workmanship to ensure no fish-mouths or voids in protections are created. In projects such as these, a liquid applied system is faster and more practical to ensure proper coverage around the penetrations with less labor cost.

In addition, the size and scope of the project will be a large determining factor in choosing between a sheet good system vs. a liquid applied system. The larger the project, the greater the labor savings are with a liquid applied membrane.

When the full design requirements of an air and moisture barrier system are considered, the need for a continuous airtight membrane that protects the building envelope from air leakage is paramount. Breaks and seams in an air barrier can

cause leaks. In sheet good membrane systems, the critical transitions are protected by adhesive tapes and, in some cases, secured by installing anchors penetrating the sheet good membrane system to fasten to the substrate. With liquid applied systems, there is a continuous, seamless airtight barrier with no mechanical fasteners making the system less likely to support air leakage and moisture intrusion.

Additionally, positive and negative wind loads, when transferred to the structure, can cause building wraps to fail. Building wraps are nonstructural and are susceptible to displacement and tearing from negative wind gusts in cavity wall assemblies and lose their effectiveness. Sheet good systems rely on taped seams and specialty fasteners against air leakage and moisture intrusion. Liquid applied air and moisture barriers fully adhere to the substrate and not just at the fastener locations, giving greater adhesion to the substrate. Liquid applied systems offer a continuous, seamless system built with compatible liquid applied flashing products for protecting the penetrations and openings in the building envelope with a seamless, fully adhered barrier.

When considering durability of the air and moisture barrier, one must first acknowledge that the barrier is typically located in a part of the assembly that will be concealed and is not accessible for maintenance. Liquid applied air and moisture barriers typically have better resistance to punctures and to continuous negative pressure from HVAC effects on the building. The ability to withstand the stress from thermal and moisture movement of building materials, resistance from termites, carpenter ants and other insects and pests, and the resistance to mold growth and abrasion may make liquid applied barrier systems the better choice.

In assemblies where fire and smoke development are a concern, liquid applied systems have an advantage over rubberized asphalt based sheet good membrane systems that will have high flame and smoke development rates. Also, some liquid applied systems are being used as insulation behind exterior insulation boards stopping air and moisture from traveling behind the insulation board and creating a thermal short.

Liquid applied air and moisture barrier systems are effective components in wall assemblies because they control moisture and minimize air leakage, therefore providing critical protection from moisture for water-sensitive components. Productivity and performance advantages along with significant labor savings make liquid applied air and moisture barriers a cost effective alternative to sheet good systems.