

## Liquid barriers

An alternative remedy for water infiltration.

Written by **CHRISTOPHER MATTHEWS**



Application of liquid weather resistive barrier to wood framed building. Liquid weather barriers offer greater protection and are less susceptible to weather damage before the wall cladding is applied than their paper and fibre counterparts.

---

At their most basic level, today's buildings are designed to offer occupants shelter from the elements. But we've all seen what occurs when weather manages to sneak through the cracks: leaks, stains, damaged wall materials and even standing water. While water infiltration is often caused by a combination of factors, when it flows to the interior of the building, it is evidence of a failure of the last line of defense – the weather resistive barrier.

Buildings are designed with the understanding that some water will eventually penetrate to the interior of the exterior wall cladding material. As required by codes and good building practices, the function of the weather resistive barrier and the associated flashings is to control this water, allowing it to flow to locations where it is drained harmlessly to the exterior. Due to the complicated installation process of traditional paper and wrap barriers, the failure of weather resistant barriers is often due to installation issues. This is one reason why liquid-applied barriers are gaining in popularity.

### **Papers and wraps**

Traditional weather barriers that have been popular for many years include building felt, kraft paper and plasticized fibre wraps. These building wrap or paper-type systems are applied to the exterior walls in a shingle-lap fashion with all seams taped. Successive layers of material must be lapped over the pieces below, including all flashing.

However, in many buildings, proper installation is not achieved.

Sequencing is the primary installation challenge for building wrap and paper-type systems. Because subsequent pieces must always be lapped over the pieces below, the sequence of installation is critical. During construction, simple errors can inadvertently create a reverse lapping of materials which would direct water behind the paper-based material. Installation must be carefully co-ordinated among all trades involved in the job, including parties installing windows, doors, flashing, pipes, vents or any other penetrations in the building's exterior. Another area of critical co-ordination is the proper integration with waterproofing materials at decks, balconies and breezeways.

Secondary penetrations by wall cladding attachment anchors represent an additional challenge to these types of weather barriers. Even if the paper or wrap is applied and installed perfectly, it will be penetrated when the cladding material is attached. For example, for Portland cement stucco cladding, it is necessary to apply metal stucco lath over the weather barrier. Securing the lath to the wall results in thousands of penetrations of the weather barrier. Each one is a potential location for water to penetrate behind the paper and flow into the wall system. This problem can arise from any type of cladding, from stucco to siding to brick. All types are attached in some fashion with nails or screws that penetrate the paper in many locations.

After application, the weather barrier is typically exposed to the weather until the wall cladding is installed. During this period, it is susceptible to wind, weather and construction-related damage. Paper products have proven to be more susceptible to lifting and damage due to wind. If damaged, paper must be replaced and properly taped and re-shingled with the remaining materials.

A final challenge associated with paper products is their general moisture resistance, as some products seem susceptible to prolonged water exposure. When water penetrates behind the exterior cladding and does not flow freely down to a drainage location, some wraps and papers have allowed water to be absorbed through to the wall sheathing.

However, despite the challenges associated with paper-type weather barriers, they do have distinct benefits for some projects. These products tend to have a lower material cost than liquid-applied barriers. The paper and wrap products also offer various degrees of vapour permeability depending upon the product selected. Some are engineered to be highly vapour-permeable, allowing water vapour within the building to pass through to the exterior while resisting bulk water intrusion. The degree of permeability required is dependent on project location and climate and building use.

### **Liquid-applied weather barriers**

Liquid-applied barriers were originally developed for use with Exterior Insulation and Finish Systems (EIFS), but have become commonly used under all types of wall cladding. These barriers are applied as a liquid with brushes, rollers or sprayers.

Unlike paper-type barriers, liquid-applied barriers do not present installation sequencing challenges. The liquid can be applied to different parts of the building in any order and may be applied in multiple coats. If a penetration or flashing is added after the barrier

has been applied, another coat of the liquid can simply be applied around that location. This can be a significant benefit in the typical schedule-dominated construction process.

Liquid-applied barriers also bond directly to the sheathing. If water flows to the interior of paper barriers, it typically continues down the wall behind the paper, eventually causing significant damage. If the liquid-applied barrier is damaged or not properly applied in an isolated location, water can enter at a single point, but there is no path for water to continue down between the barrier and the wall sheathing. This localizes any water damage due to improper barrier installation or construction damage.

These types of weather barriers offer greater protection and are less susceptible to weather damage before the wall cladding is applied. They are also easier to repair should damage occur. Because the liquid bonds to the sheathing, it does not lift or tear after application. If damaged, it can be touched-up by simply applying additional liquid over the damaged area.

Liquid-applied barriers tend to provide greater resistance to water infiltration than paper barriers, however, liquid-applied barriers are not without their challenges. There is a greater up-front material cost for liquid-applied coating products. Liquid-applied barriers also tend to be less vapour permeable than some wraps. The decrease in permeability is a trade-off for the increased water resistance. The permeability requirements for each project should be reviewed by a mechanical engineer in weighing the use of different product options.

### **Barrier bottom line**

Remediating water infiltration is costly and intrusive. Selecting the correct weather barrier for a project – and installing it correctly – can be the key to successfully avoiding future problems. While liquid-applied barriers are becoming increasingly popular, paper and wrap products certainly have their place. The best bet on any job is to consult with building envelope specialists and mechanical engineers to ensure that an appropriate product is selected and properly installed. •

---

Christopher Matthews is vice-president and senior consultant at Glazing Consultants International, LLC

[ [Back](#) ]