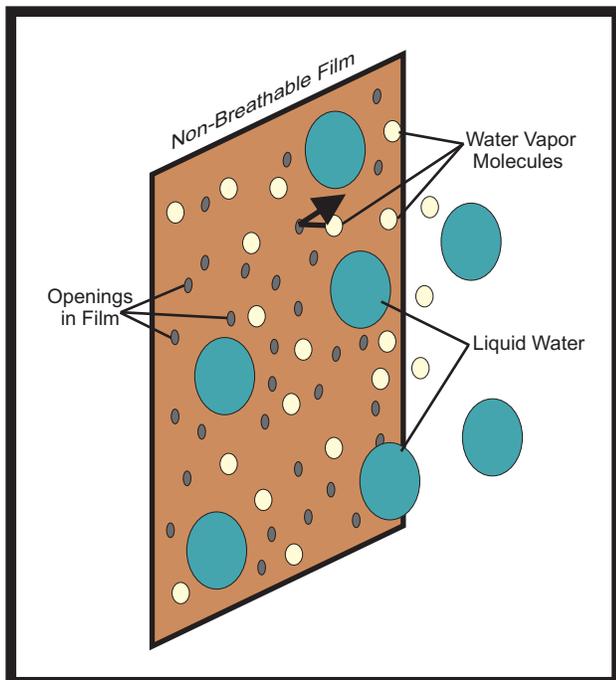


Technical Tip

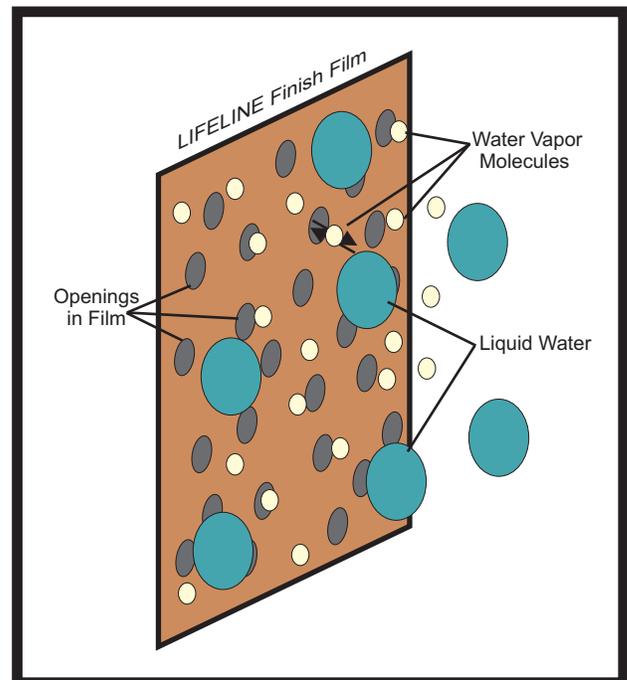
What is a Breathable Film?

One feature of Perma-Chink's LIFELINE finish systems is their ability to breathe but what exactly does this mean? To understand it takes a little bit of chemistry and physics but the concept is fairly simple. For those of you who want to impress friends and relatives, the scientific term is vapor permeability, the ability of water vapor to permeate through a film. Polymer films are composed of long chains of molecules that are bound together in a three dimensional matrix. This matrix in films like polyurethane and alkyd coatings is quite dense and there is not much space between the polymer chains. This prevents water vapor molecules from making their way through the film. On the other hand acrylic latex polymers form a less dense matrix with enough room for water vapor molecules to penetrate though the film but not enough space to allow liquid water to make its way into or through the film. You can think of it in terms of a film with a bunch of small holes or pores that filter out large objects but allow smaller objects to pass through (see attached diagram). In chemistry these types of films are known as semi-permeable membranes but in our industry we call them breathable.

In addition to the chemical composition another factor that influences vapor permeability is the thickness of the film. The thicker the film, the more difficult it becomes for water vapor molecules to make their way through. That's one reason we constantly remind people to apply our finishes in thin layers. When applied too thickly even acrylic latex films can't breathe.



Non-Breathable Film



LIFELINE Breathable Film