

What is a Breathable Film?

One feature of Perma-Chink's LIFELINE™ finish systems is their ability to breathe, but what does this mean? The term describes the ability of water vapor to permeate a film. The water vapor transmission rate is measured to determine the extent of vapor permeability through a film. Polymer films are composed of long chains of molecules that are bound together in a three-dimensional matrix. As the density of this matrix increases in a film, the lower its permeability. The acrylic polymers used in our formulations form a less dense matrix allowing water vapor to permeate the film, but not liquid water. It can be thought of in terms of a film with many small holes or pores that filter out large objects but allow smaller objects to pass through (see attached diagrams). These types of films are known as semi-permeable membranes, but they are often referred to as breathable films. Our Lifeline finish system, diagram below on the right, is one such system.

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 permeate the film. That is one reason we constantly remind people to apply our finishes in thin layers. When applied too thickly even acrylic latex films can not breathe or are defined as vapor barrier

