

Technical Tip

The Penetration of Film Forming Stains

Many people do not understand film-forming stains and how they adhere to wood. Much of this misunderstanding relates directly to the term “stain.” In the past staining wood meant that the wood fibers themselves became impregnated with color and that the color penetrated into the top layer of wood. Even today most oil-based stains work in this manner. Once stained if the surface is rubbed or scratched the color of the stain still remains since the solvents carry the colorants into the top layer of wood which make the fibers beneath the surface the color of the stain.

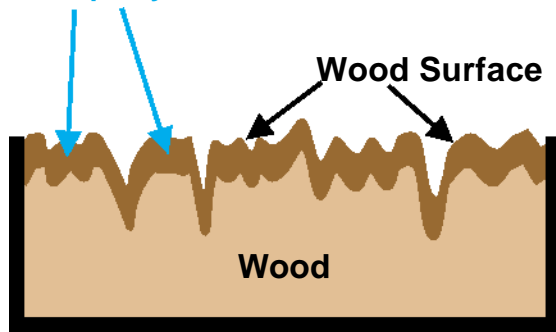
On the other hand, water-based stains like our LIFELINE™ products do not actually penetrate into the wood fibers! That's one reason we try to refer to them as finishes rather than stains. But since the term “stain” has been used for hundreds of years, it's difficult for the general public to grasp the difference between oil-based and water-based products other than the odor. When we talk about the penetration of our products we are referring to their ability to fill the microscopic voids, fissures and pores on the surface of the wood. This enables the film to adhere tightly to the wood's surface. It's this property that we call adhesion. However, if the film is scratched or rubbed off of the surface, the original color of the bare wood will be visible.

Why is this important? We've had customers call us thinking that the product we shipped them was defective because they were able to rub or scrape the film off and there was no color evident under the film. In their mind the wood had not “taken the stain.” That's because they had never worked with a water-based film former before and were used to seeing the results produced by a penetrating oil-based stain.

So how can we best explain how our products work? Most people are familiar with use and behavior of latex paint. It behaves quite similar to a water-based film forming stain in that if it is scraped off of the surface uncolored bare wood becomes visible. Our water-based stains behave in a similar way to latex paint. The benefit is that the protection offered by a film on the surface of the wood is far superior than that provided by a product that soaks into the wood leaving the surface of the wood exposed to the sun and weather.

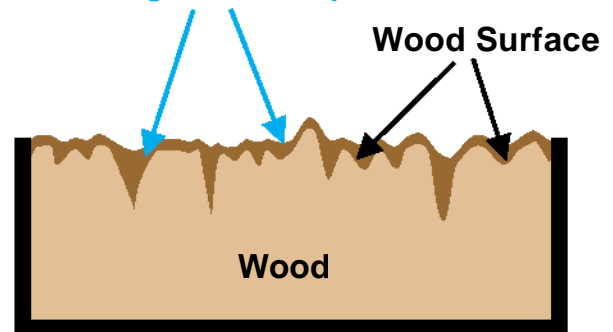
Microscopic Cross-Section of Wood Surface

Oil Stain in Top Layer of Wood



Penetrating Oil-Based Stain

Film Forming Stain on Top Surface of Wood



Film Forming Water-Based Stain

The wood surface absorbs an oil-based penetrating stain into the top layer of wood fibers carrying the pigments along with it. The fibers themselves are thus “stained” with the pigments.

A water-based, film forming stain sets on top of the wood surface and fills in many of the small cracks and fissures resulting in a smoother surface; however, the wood fibers themselves retain their original color.