

The Dynamics of Weathering

Many people are under the impression that the winter months are hard on their logs and finishes. To some extent that is true in cold climates where the exterior log surfaces may be covered with ice and snow for several months. However, the most damaging effects of weather on wood and coatings occur during the hot summer months. One important and destructive component of sunlight is ultraviolet, UV, light. UV light in the presence of oxygen is responsible for most damage to exposed wood and coatings. In wood it changes or destroys the wood's lignin, a component of wood that hardens and strengthens the cell walls. In a coating it destroys chemical bonds and contributes to the breakdown of the coating. This process in both wood and coatings is called photo-oxidation.

Our LIFELINE™ finish systems do help to slow down this photo-oxidation process through three distinct mechanisms: reflection, absorption, and chemical reaction. Our Advance topcoats help reflect the sun's rays thus reducing the amount of UV light hitting the color coats and the underlying wood. Glossy surfaces reflect more sunlight than a matte finish. However, an accumulation of dirt on the finish will significantly reduce the reflective properties of the topcoat. This is one reason why a home should be routinely cleaned with Log Wash. Advance topcoats also help protect the color coats and wood from the abrading effects of wind, rain, ice and snow.

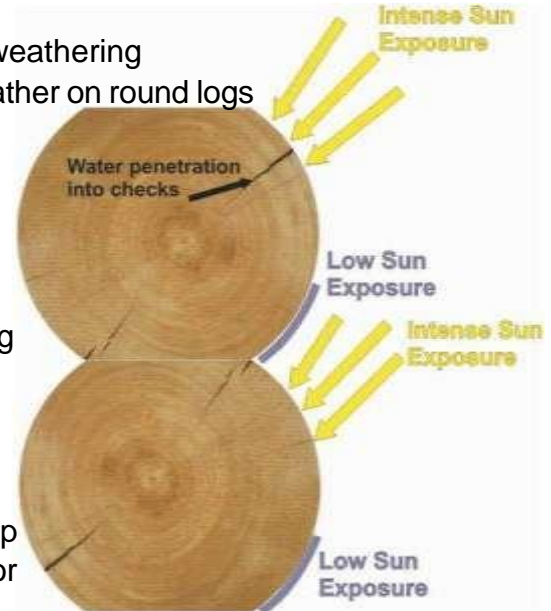
The colorants contained in the color coats are responsible for scattering and absorbing UV radiation. The more colorants a finish contains, the less UV radiation will reach the wood. Opaque finishes like paint and solid body stains block UV light from getting through to the wood. That is why when paint peels off, the freshly exposed wood may still look bright. On the other hand, the objective of transparent stains like LIFELINE is to allow the character of the wood to show through the finish. In order to accomplish this transparency, the pigment loading is significantly less than that contained in opaque finishes. This allows more UV radiation to reach the wood. Since darker stains typically contain more colorants than lighter stains, the wood and color life last longer. However, some of our light color stains that contain TiO₂, i.e. Butternut and Wheat, also have a longer life, at the expense of transparency.

High quality finishes like LIFELINE also contain components known as UV inhibitors that chemically protect both the finish itself and the underlying wood from the effects of sun exposure. The limitation of these constituents is that they are sacrificial. In other words over time they get used up. The more sunlight that hits them the quicker they lose their effectiveness. In shaded areas of a home these UV inhibitors may continue to work for many years but in those highly exposed areas of a home like the south and west facing walls, they may only last a few years. That is why occasional maintenance on a home is so important.

Round Logs

The profile of the logs has a significant impact on the weathering characteristics of a wall. The effect of sunlight and the weather on round logs is altogether different than on squared logs or flat, vertical siding. The top third of a round log is subjected to much more intense weathering than the bottom third. As a result of the increase in UV radiation on the top third of the logs, the UV inhibitors maybe consumed faster. Over time this can result in a noticeable difference in color and weathering effects between the upper and lower sections of the logs.

In cold weather climates, snow and ice can accumulate on the upper third while the bottom third remains relatively protected. Upward facing checks that have formed in the top section of the log will funnel rain water directly into the interior of the log where it can soak into the surrounding wood.



Providing some maintenance to the upper sections of round logs without creating lap marks or color differences can be a challenge. The key is to perform maintenance before the weathering effects become noticeable.



Squared Logs

Squared logs and vertical flat siding are easier to maintain since the sun hits the logs at the same angle, and the UV light is evenly distributed over the entire surface. In addition, the flat vertical surfaces cannot accumulate snow and ice and even upward facing checks are not as prone to rainwater entering the logs. Although squared logs are subjected to the same weathering parameters as round logs, the weathering is mostly uniform over the entire exposed surface. This makes maintenance easier to accomplish without worrying about lap marks and color differentiation.

Log Siding

Log siding is typically used on dormers and gable ends. Depending on the quality of log siding, the effects of weathering can be worse than those observed for round logs. Log siding is sometimes manufactured from green wood. This makes it more susceptible to twisting, warping and cracking. Since siding does not have the high thermal mass of full logs, during the summer months their temperature can range from 80° F to 160° F or higher during the course of one day. This puts much more mechanical stress on both the siding and its finish system resulting in small fissures forming on the surface. Rainwater can then enter these fissures and get behind the finish.



Fissuring of Log Siding

Round log siding is typically milled quite smooth. The extreme smoothness presents a challenge applying the proper thickness of pigmented stain necessary for adequate protection of the underlying wood. Smooth log siding should be coarse sanded or pressure washed using Wood ReNew before the application of the pigmented stain. Prelude Clear Primer should never be used on log siding unless it is unusually porous or has been media blasted.

Protecting Your Home

There are two basic ways to combat the effects of weathering. The most effective method is to keep log walls and siding in the shade by extending roof overhangs or constructing roofed porches around the home. The next best way is to apply a high quality finish system like LIFELINE™ and Advance Topcoat. But the overall performance of even the best finish system is dependent upon proper surface preparation and application technique. Avoiding the use of chlorine bleach; and back-brush all coats of finish to assure adequate film thickness for long term protection of the wood.

Routine maintenance also plays a role in extending the life of your finish system. Our Advance Topcoats help reflect sunlight thus decreasing the amount of UV radiation that reaches the surface of the wood. If the surface is dirty, it diminishes the reflective properties of the topcoat. Cleaning the exterior of your home a couple times a year not only keeps your home looking attractive but helps retain the color of the stain and protects the underlying wood from UV damage.