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Moisture Content and Log Construction/Stain Application

Knowing the moisture content of your logs is critical to the success of your log finish application.

If log finish is applied to logs that have an 18% and over moisture content, mold and mildew has fertile ground to grow beneath the surface of the log coating. When log moisture is below 18% the log surface will not support the growth of mold and mildew. Also, high moisture content logs can cause film type log coatings to blister or peel. When in doubt about moisture content, use a moisture meter to make certain the moisture content is below 18% prior to applying any log finish.

Moisture in log structures comes from one of two sources: Original moisture from the tree that remains in the unseasoned log and moisture that has penetrated dried wood from the environment. The moisture present in the wood naturally is referred to as *Initial Moisture Content*, expressed as a percentage of its dry weight. The living tree typically has a moisture content of 30% and can be as high as 200% or greater in some domestic species. Most structural lumber products are dried to between 15%-19% moisture content for reasonable stability after they have been installed. Due to the large cross section of logs typically used in log structures, it is very difficult to guarantee specific moisture content throughout the log. When logs have a moisture content less than 18%, the logs are considered dry enough to apply a stain/coating.

A log's moisture is significant for several reasons:

1. Wood will continue to lose moisture through evaporation until it reaches equilibrium with the temperature and the relative humidity of the surrounding environment. Trying to apply a stain too soon while this water is evaporating out of the logs can cause film forming stains to lift or peel from the log.
2. As moisture is lost from a log, dimensional change is likely to occur. This is called **seasoning**. The change is seen as *Shrinkage* as the cell walls shrink and densify. The release of the stress created when the cells collectively shrink may be heard as a loud pop and appears as a check running along the grain on the surface of the log.
3. Shrinking and swelling seen in seasoned wood and is known as **movement**. Finishes, caulks and chinking must be designed to allow this movement without failing.
4. **Blue mold** is a sap staining fungi that occurs in high moisture content logs that have not been properly treated at the initial debarking. Once Blue mold is present, it is virtually impossible to remove.
5. Wood's physical properties benefit as moisture content is reduced. Less moisture means lower weight and easier handling. Interior sanding quality improves and becomes easier.

Here are four types of wood and treatment options you can use to deal with your moisture content issues:

1. **Kiln Dried Log Siding** - Generally, Log Siding has a moisture content between 12%-16%. This product is immediately ready for staining after cleaning.
2. **Laminated Logs** - On the average, the moisture content of laminated logs is below 14% and they are ready for immediate application of log finish once they have been cleaned.
3. **Kiln-Dried or Air-Dried Logs** - The moisture content of these logs is generally below 18%. However, some logs may have a moisture content higher than 18%. It is recommended you apply **Sikkens Log Pre-Treatment** and then allow a six month drying period before applying your log finish, unless you are certain the moisture content is below 18%.
4. **Green, Wet, or Field Borate Treated Logs** - These logs have a moisture content greater than 18%. It is recommended that **Sikkens Log Pre-Treatment** be applied and allowed one year to dry before applying a final log finish on your home.