



Guide To Maintaining Log Structures



SINCE 1916



The log home dwelling represents a natural alternative to the plastic facades of modern day housing. Dating back to our European ancestors, log homes are a symbol of our *American Heritage* and represent our intimate connection to the land. Because of this reason, it should come as no surprise that whenever a log home is seen from the highway or on some back road that most people will slow down and take a brief moment to admire it. It has something to do with roots...both ours and the trees.

The Great Wood Protectors



Insist On Continental Quality
to Protect Your Log Structures.

A Brief Remark about "The Guide"

The Continental Products Company has been serving the log home industry since 1973. We're one of the oldest suppliers of maintenance products still serving the Log Home market. Our many years of involvement in this very unique and wonderful industry and the practical knowledge gained are reflected on the pages of this now legendary little booklet. This booklet was first introduced back in 1984. It has been through a number of revisions since that time but the essential message has remained unchanged. "The Guide" has helped thousands of log home owners over the years achieve a greater understanding on how to better take care of their log homes.



Manufacturers of:

WeatherSeal

Exterior Oil-based Wood Stains

Super Natural

Exterior Wood Protector

PolySeal

Interior Water-Based Wall & Woodwork Varnish

TranSeal

Interior High Solids Polyurethane Wall Varnish

Puttylastic

Log Home Construction Caulk

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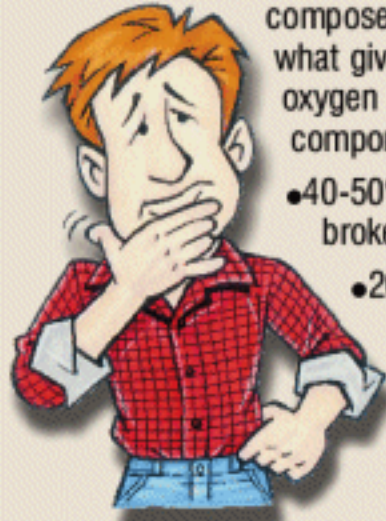
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UNDERSTANDING THE BASICS

As a log home owner, it is important to understand a few basic facts about wood in order to keep your home properly maintained and to avoid costly future repairs. Your maintenance decisions should be based on an understanding of the factors that are harmful to wood. So let us begin our inquiry by focusing our attention on the stuff that dream homes are made of...wood.

What is wood?

Wood is a cellular material that makes up the bulk of the tree. It is like a sponge composed of mainly dead hollow cells. This cellular structure is what gives it its insulating value and allows it to hold water, oxygen and nutrients. Wood, when reduced to its simplest components, is made up of:



- 40-50% cellulose - a complex molecular structure that when broken down yields the simple sugar glucose.
- 20-35% Hemi-cellulose - closely related to cellulose, but includes more than one type of sugar
- 15-30% lignin - an intercellular material; "the glue" that bonds the wood fibers (cellulose and hemi-cellulose) together.

Various extractives are also present in cell cavities. They are oils, tannins, waxes, gums, starches, alkaloids, color materials and 1 to 2% ash forming minerals. These extractives contribute to wood's color, odor, taste, decay resistance and flammability.

Essentially, when wood fiber is broken down into its elemental state, it's composed of primarily simple sugars. It is these sugars that a group of organisms called fungi consume as a food source. Fungi are a leading destroyer of wood and cause a considerable amount of economic damage. The key to a sound maintenance approach centers on a basic understanding of these organisms and how to prevent their occurrence.

Fungi

Fungi are a primitive form of plant life. They contain no chlorophyll which means they can't convert sunlight to usable energy like other plants. To obtain their energy, fungi will feed on the sugars and starches found in sources such as wood. If left unchecked, fungi will eventually breakdown and destroy the wood it's feeding on.

There are three groups of wood attacking fungi:

- **Mold**
- **Sap Stain**
- **Decay**

MOLD AND SAP STAIN - These organisms are not structurally harmful to wood. They feed on the nutrients contained within the sapwood cells.

The Problems with Mold and Sap stain are:

Appearance - They cause discoloration on the wood surface if it's mold, or below the wood surface if it's sap stain. This discoloration ranges in color from black, gray, bluish green, and white.

Increase Capacity of Wood to Hold Water - They make the wood more porous.

Biological Warning Sign - They indicate there is excessive moisture which can eventually lead to decay, if not remedied.

DECAY - These are the fungi that can seriously damage any log or wood structure and the reasons an intelligent maintenance program is so important. Decay feeds off the structural components of wood (i.e., cellulose, hemi-cellulose and lignin), by breaking them down into simple sugars for easy consumption.

There are three types of decay fungi:

Brown Rot - The wood is brown, crumbly and breaks into small cubical pieces; the strength of the wood decreases rapidly as decay proceeds. Brown rot has commonly been mislabeled "dry rot" implying that wood can decay without being wet, which it cannot! Brown rot often looks unusually dry, being brown and cracked across the grain as though it had been severely heated. Most wood damage of any economic importance is caused by this group of fungi!

White Rot - The decayed wood often assumes a bleached appearance and feels spongy; the strength of the wood decreases gradually with little loss in strength occurring during the early stages of decay. It doesn't crack across the grain like brown rot and until severely degraded, it doesn't shrink or collapse.

Soft Rot - The fungi that causes soft rot is in a completely different group than the more familiar brown and white rot fungi. Soft rot tolerates both wetter and drier climates. Wood decayed by soft rot fungi softens gradually from the surface inward. It occurs primarily in water-cooling towers, in marine habitats and in wood in contact with soil.

Fungi require four elements to survive.

- **Food Source**

Wood

- **Temperature**

Decay: approx. 68° - 97°F. (23° - 36°C)

Mold and sap stain: approx. 75° - 85°F. (24° - 29°C)

- **Oxygen**

Decay requires 20% free oxygen in the wood. *That's why wood kept totally submerged in water will not normally rot.*

- **Water**

Wood does not have to be in contact with water; stagnant, damp, humid air will suffice.

Eliminate any one of these four factors and fungi cannot survive.

Realistically, the only factor the homeowner can have some influence over is water. So the basic strategy of a log home maintenance program is to eliminate or at least reduce the effects of moisture. In fact, there is a direct correlation between mold, mildew, and decay problems and insect problems. Many problem insects also require higher levels of moisture to thrive.

Weather

In addition to fungi, weather is the other cause of wood deterioration.

The chief factors in the weathering process are:

- **Ultraviolet Ray (sunlight)**
- **Water**
- **Temperature**
- **Abrasion**

Ultraviolet Rays or UV causes a breakdown in the lignin component of the wood cell which gives rise to color changes. Light woods tend to darken and gray. Dark woods bleach out and gray.



Water plays a major role in weathering of wood. As UV causes lignin to degrade, water washes away surface cellulose fibers that have been released due to the breakdown of lignin. As these surface fibers are washed away, new fibers are exposed and the cycle continues. Water also causes swelling and shrinking of the wood surface, developing cracks which expose new wood fibers to UV breakdown.

Temperature is not as critical a factor as UV and water, but hotter temperatures combined with UV accelerates the overall deterioration process. With regard to log homes, warmer surface temperatures will increase the rate of moisture release from within the logs which in turn can cause a greater amount of cracking or checking on the log surface. That's why it's a good idea, especially on newer log homes which generally contain more moisture, not to use dark color stains. Darker colors promote hotter surface temperatures which in turn can lead to an increase in the rate and volume of moisture released from within the logs. Also wet/dry & freeze/thaw cycles of water absorbed in surface wood fibers will lead to smaller stress cracks on the wood surface.

Abrasion is caused by the combination of sand, dirt and other particles blown by wind against the wood surface. Abrasive weathering not only can cause damage to the wood fibers on a log or wood surface but it will also shorten the life of any wood coating protecting that surface. Small particles such as sand, can become lodged in surface cracks and through swelling and shrinking, weaken wood fibers in contact with it. Solid particles in combination with wind can have a significant sandblasting effect. A log home in a treeless field is especially vulnerable to abrasive weathering.

Intelligent Log Home Maintenance

Building Design and Location

The first major consideration is the selection of the building site. Locate the log home on a site where rain water will drain away from the structure on all four sides. If this is not possible, crown the area where the house is built and alter natural drainage by using swales, retaining walls or ditches of subsurface drain tiles before you begin construction. If water is allowed to accumulate under a log home, decay could develop quite rapidly.



Earth/wood contact greatly enhances chances of colonization by termites and decay fungi. As a consequence, it is recommended that the foundation wall be constructed in such a manner that there be ample distance between the logs and earth. It should also be high enough to prevent rain water from splashing on the logs. One of the most effective features to be built into a log home are a wide roof overhang and gutters because they help combat decay in logs closer to the ground and around doors and windows.

Wider overhangs are particularly desirable in areas of high rainfall. Minimum projections of not less than 18 inches (preferably 24) for one story and 24 inches (preferably 36) for two stories are recommended. Roof-supporting members of logs or of sawn lumber should not project beyond the eaves. If they do, they will become easily wetted and susceptible to decay.

As your home is being constructed, make certain that the attic and crawl space areas are adequately vented to prevent the accumulation of moisture

within the living space. The soil in crawl spaces should be covered with polyethylene to reduce the relative humidity of the air in sub-floor spaces.

Lastly, when landscaping the home, keep shrubs and plants proper distance from the house. They're an ideal source for moisture and insects.

The Best Protection Against Fungi and Insects Is To Keep the Log Walls Dry!

FUNGI and INSECTS – Methods of Control

During the construction phase, it's important that any evidence of mold and mildew is removed. As mentioned earlier, mold and sap stain increase the wood's capacity to hold water by making it more porous like a sponge. Greater porosity in the wood cells promotes easy absorption of rain water which in turn significantly increases the possibility of decay.

Attempt to keep the logs as mildew-free as possible while the home is being built. Some manufacturers treat their logs at the mill with a wood preservative to minimize any major outbreaks of fungus during the transportation of the logs. Even if they are treated with a preservative, when the logs are delivered, prevent them from touching the ground or each other by placing stickers (spacers) between them. This procedure, by allowing air circulation between the logs, will help ventilate any build-up of moisture and heat caused by the drying logs, thus reducing the chances of an outbreak of mold and mildew on the logs surfaces during storage and construction.

During the building process, it is advised to thoroughly inspect each log for evidence of mold and mildew. Clean any mildew-infected logs with one of the cleaning formulas provided below.

If mold and mildew are present, treat with the following solution:

BLEACH BASED CLEANING FORMULA

- 1/2 cup (4 oz) Trisodium Phosphate (TSP) or non-ammoniated substitute found at your local hardware or paint store.
- 1 quart (32 oz.) of fresh household bleach
- 3 quarts of clean warm water
- A couple squirts of Dawn® detergent
- Mix thoroughly

Wet the log surface first. Then apply the solution onto the designated area with a mop, hand-pump garden sprayer, etc. Allow the cleaning solution to remain on the surface for 5-10 minutes and pressure rinse thoroughly clean with fresh water. If needed, lightly scrub the solution with a soft scrub brush over deeply discolored areas. Repeat the cleaning process if necessary. This treatment will kill the fungal growth as well as clean the log surface. However, it will not prevent the future occurrence of these organisms if conditions are suitable.

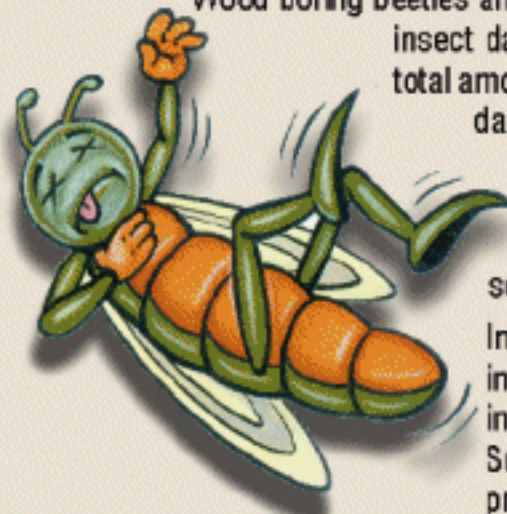


When applying either wood cleaner: wear goggles, rubber gloves and necessary clothing to prevent eye and skin contact. Also shield plant and shrubs from contact.

NOTE: There are a great variety of commercial wood cleaners available for cleaning your logs. They will, in most instances, cost more but there may be a convenience factor worth the added cost.

Insects

What preventive measures should be taken against insects?



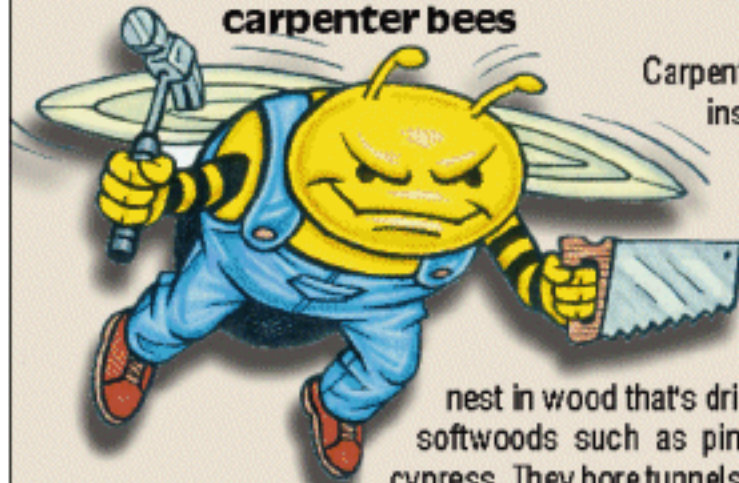
Wood boring beetles and termites cause the major amounts of insect damage in log homes. Compared to the total amount of wood destroyed by decay, insect damage is small. This is not to underestimate their destructiveness. If there is a problem with wood-damaging insects, it can be a serious one.

In areas where termites are a problem, it is important that the soil is treated with an insecticide around the home's foundation. Such treatment requires the services of a professional exterminator.

For the prevention and control of wood-boring beetles, keeping the log walls as dry as possible in conjunction with insecticidal treatments are the best methods the homeowner can employ.

A number of log manufacturers treat their logs with a relatively safe low toxic insecticide called sodium borate or make available such insecticides for the homeowner to apply after their log structure is erected. Additionally, some log home companies will use wood that is naturally more decay and insect-resistant or kiln dry their logs to temperatures that would kill any insects that may be present in the wood.

The number one insect complaint... carpenter bees



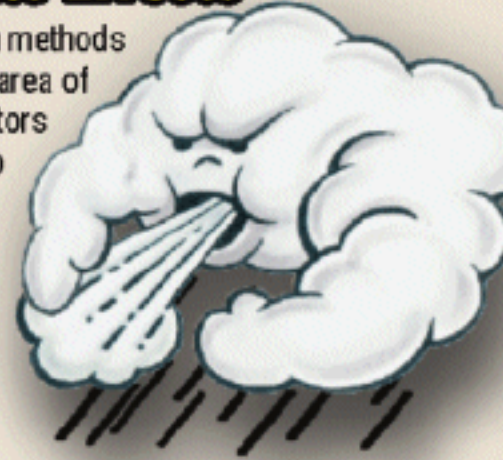
Carpenter Bees are an annoying insect pest and a somewhat common nuisance to log homeowners. Carpenter bees resemble bumblebees but unlike bumblebees they use wood for nesting. They

nest in wood that's dried and seasoned and prefer softwoods such as pine, fir, cedar, redwood and cypress. They bore tunnels in the wood to lay their eggs leaving round entrance holes. Attractive nesting sites include nail holes, exposed cut ends and bare, unpainted wood. Typical areas of infestation include wood trim near the eaves and gables of a home, log and conventional wood siding, fascia boards, porch ceilings, fence posts, railings, outdoor wood furniture and non pressure-treated decks. The best methods of prevention are to keep all exposed wood surfaces well painted or stained using an oil-base coating. To treat infestation, locate the tunnel entrances and apply an insecticide directly in the tunnels and over a wide adjacent area. It's best to treat in the evening toward dusk when its cooler and the bees are less active. *Do not immediately seal the entrance holes in order to allow the bees to freely distribute the insecticide throughout the tunnels.* If the openings are plugged before the bees are killed, they can chew new openings elsewhere. Insecticide dusts are more effective than sprays because it readily clings to their bodies and newly emerged bees will contact the dust when leaving the

opening. Effective dusts to use should contain active ingredients such as bendiocarb, carbaryl and pyrethrins. After treatment, it's best to wait until adult activity ceases or until autumn before sealing holes with caulking compound or wood putty and staining or painting. Finally, adding a paint additive insecticide to the stain may also create another barrier of defense against carpenter bees as well as other crawling insects such as spiders, ants, wasps, etc. These additives can be found at most paint stores or log home maintenance supply companies. *(Pesticide recommendations are subject to change due to constantly changing EPA registrations. These pesticide recommendations are to be used as a guide only and if any of these recommendations disagree with the labeled product, the recommendation must be disregarded. All liability is assumed by the applicator.*

WEATHER – Combating Its Effects

Up to now, our attention has been focused on methods for controlling fungi and insects. The other area of concern is weather. The four weather factors (sunlight, water, temperature, abrasion) also play an important role in creating the necessary environment for fungal growth. By protecting your log home against the adverse conditions of weather, you will also be employing the fundamental maintenance strategy against fungi, which is to reduce the effects of moisture.



Many treatments have been proposed to protect wood against weathering. Of all the various coatings and treatments available, paints containing UV absorbing or screening pigments provide the most protection to wood. However, most people who choose to purchase a log home don't wish to paint their logs and hide the natural beauty of the wood. Leaving aside the artificial appearance of a painted log, there is a more serious problem with using paint on a log structure. It has to do with the mass of the logs and the moisture contained within them. Because paint is designed to encapsulate and totally seal the wood fibers from the elements, it can and will trap the moisture that is naturally trying to escape from within the log to the outside environment. This is especially true with new, greener logs. This condition can lead to wood rot and a whole host of moisture-related coating problems. Kiln-dried or air-dried logs that have been dried to an 18% oven dry weight don't usually encounter these particular kinds of problems because the moisture throughout the log has been sufficiently reduced.

What should I put on my log home to protect it?

In order to properly address this question it's crucial to understand the relationship between a building's location & design and a coating's performance. The location and design of a log building is a major contributing factor to long term maintenance costs. This very important detail is too often overlooked. Different locations will frequently require different building designs. If the building is not properly designed for its location, then surface maintenance inevitably becomes a more regular task no matter what brand of exterior wood coating is used. And when a coating fails to live up to expectations because of location and design factors, it usually gets the full blame. The wood finish becomes an easy target because its breakdown is so obviously visible and is regarded as the cause of failure instead of a symptom of deeper underlying causes. A quality log home finish or stain, although it will certainly perform better than the lesser varieties, will weather more quickly when design considerations have been overlooked. An exterior wood stain alone can never remedy design deficiencies, no matter how good it is! Nevertheless, the type of natural wood finish or wood stain to use on a log home should provide a broad spectrum of protection and possess the following characteristics:

- **UV (sunlight) protection** to prolong the life of the coating and to protect the wood beneath.
- **Mildew resistance** to protect the wood against fungus attack, to prevent unsightly discoloration and to extend the life of the wood stain.
- **Water resistance** to prevent cracking of the wood and as another valuable tool for the prevention of fungus.
- **Fade and weather-resistant pigments** to prolong the protective functions of the coating and for visual appeal.
- **Easy to renew and simple to use***.

*Beware of over engineered log home coatings that require separate base coat and top coat/clear coat formulas. Not only are these coating systems more prone to initial application error, but at some point in time your log home coating will need refurbishing. To minimize costly, complicated and confusing rework, it is best to choose a single coating system. Simpler really is better.

A Unique Challenge

Log homes pose a unique challenge for any type of exterior wood coating because the mass and surface of a log will vary from log home to log home. Each individual log can contain varying moisture contents, differing amounts of resin, a predominance of bark, cambium, sapwood or heartwood surfaces and different densities of growth rings. In addition, log products are skip-peeled, draw-knifed, finely milled or somewhere in between and also come in various sizes, shapes and profiles. And don't forget all of the numerous types of species of wood. Unfortunately, it's not possible to design a log home coating that will wear in a similar manner over such a wide range of variables.

Finishing touches

Prior to coating with a good quality log home stain, a new log home normally requires a seasoning period to allow moisture within the logs to be released to the outside environment. The moisture content of a particular log building will vary from one manufacturer to the other, so it is best to consult with your log manufacturer for advice on when to first coat the exterior logs with a stain. Generally, it is recommended to wait at least 6 months after the home has been built before applying the first coat. This allows the logs to dry and lightly weather, which in turn makes a better wood surface for a wood finish to adhere to and absorb into. If the logs are legitimately kiln dried or air-dried to 18% oven dry weight, then this waiting period is normally not necessary. Regardless, check with your Manufacturer for their recommendations.

Before applying an exterior wood stain, spray the logs with one of the cleaning solutions mentioned earlier. Apply the cleaner onto the wood surface with a soft bristle scrub brush or garden sprayer and let remain on the surface for about 20 minutes. Scrub clean where necessary, then completely rinse with fresh water and preferably pressure wash clean (500-750 PSI) Do not let the cleaning solution dry on the wood surface before rinsing. Repeat if necessary.

On dense, impenetrable wood surfaces that are difficult for a wood stain to absorb into and adhere to, roughing the surface prior to coating is recommended. Various methods can be used such as: orbital sanding with a medium to coarse grit sandpaper, buffing the wood surface with an 80 grit Osborne Buffing Brush (1½ inch bristle with 5/8" arbor), and *corn cob blasting*†.

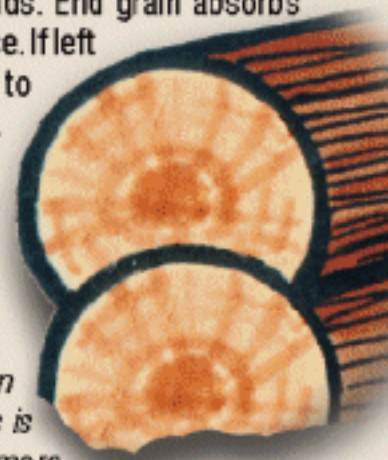
The frequency of additional maintenance coats will depend on climate, location, extent to which surfaces are sheltered from weathering, nature of the wood, quality of the finish, and application techniques. If the logs are checking and cracking exposing untreated wood, or if the finish shows signs of wear and is not providing an adequate water barrier, it's time to recoat. Also, the Southern and Western exposures absorb the full force of the elements more directly, so expect to recoat those areas more often.

Log Ends

Special attention should be given to exposed log ends. End grain absorbs twelve times more water than the rest of the log surface. If left unprotected, end grain is particularly susceptible to cracking, discoloration & damage caused by fungus.

To prevent such an occurrence, periodic inspection and treatment of the log ends with a quality water-resistant finish is advised. In addition, waterproofing the end grain will significantly reduce checking of the log ends.

NOTE: Continental makes a unique Log Home stain called WeatherSeal™. One of WS's unusual features is its thick consistency. Due to its thickness, more waterproofing protection can be applied to the log ends than is possible with typical runny-thin stains.



An Internal Dilemma

Many new log home owners desire a transparent, cleanable surface on the inside log walls that only a varnish type coating can provide. Because varnishes are basically a clear type of paint that forms a film, it is important that the logs are adequately dry before applying such a coating. Otherwise, as previously discussed, moisture-related coating problems could occur. Since the amount of moisture in the logs will determine the length of time required to wait, it is best to consult the manufacturer of your logs for their recommendations regarding a time frame for applying an interior varnish. If any doubt, wait at least 12 months and through a heating season before coating the inside logs with a varnish. Never apply a varnish on the outside logs!!!

Check It Out

Another area of concern is the formation of cracks or checks in the logs. Although there are a variety of factors that cause checking, our concern is checks caused by moisture.

There are two sources of moisture that contribute to log surface checking:

- **Internal**
- **Environmental**

Internal moisture is the water contained in the tree when it is freshly cut. This water is located within the wood cells and in their cell walls. The moisture within the wood cell is known as free water and is the first to be eliminated in the drying or seasoning of the wood. Free water is eliminated when the logs have reached around 30 percent moisture content. All moisture located in the cell walls is known as bound water and does not begin to leave the wood until all the free water from the wood cells is eliminated. As the water in the wood drops below 30 percent moisture content, the release and elimination of bound water begins. It is during this stage that log shrinkage and checking occurs.

Ideally, in the "seasoning" stage, moisture within the logs should decrease at a steady, even rate. The more rapid the rate of moisture released from the logs, the greater the probability of checking. Consequently, a slower evaporation rate will reduce checking and provide a more uniform shrinking and settling of the logs. Since numerous variables contribute to the rate and volume of moisture released from the logs to the environment, control of this natural process by the homeowner is best achieved by the maintenance procedures already discussed.

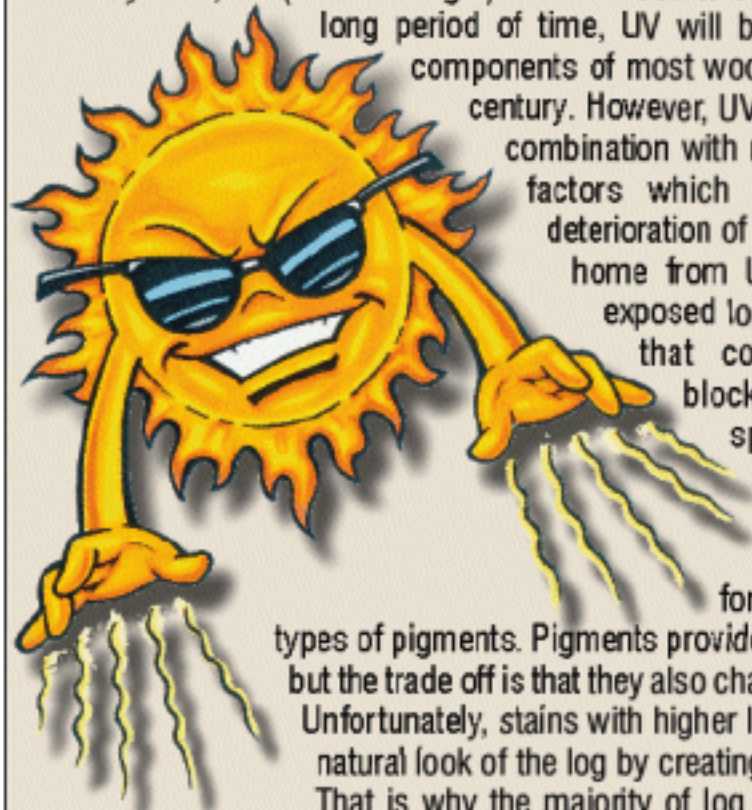


Environmental moisture is caused by moisture from the external surrounding environment such as snow, rain, lawn sprinklers, etc. As the wood surface becomes wet, it swells or expands, and as it dries, it contracts or shrinks. When the wood is subjected to a number of these wet and dry cycles, and in winter climates freeze/thaw cycles, the stresses that result will cause cracks in the wood. All the precautions and methods mentioned earlier in relation to controlling fungi apply here. Once again, the whole object is to keep the logs dry. That is the reason it is so important to apply a premium quality water-repellent log home stain. Such a stain will provide the necessary protection against the damaging effects of moisture.

Finally, don't overlook upward facing checks. They can be a nagging source of air and water infiltration. The wider and deeper they are, the greater the potential for problems. Sealing the checks with a quality acrylic latex or polyurethane caulking compound will usually remedy the situation, but it's a smart idea to saturate them first with a wood preservative before caulking. This precaution will greatly reduce any chance of rot.

Keeping the Rays at Bay.

By itself, UV (ultraviolet light) causes wood to darken and gray and over a long period of time, UV will break down the structural components of most wood at about a 1/4 inch per century. However, UV rarely works alone but in combination with moisture, fungi, and other factors which together accelerate the deterioration of wood. To protect your log home from UV requires shielding the exposed log surfaces with a coating that contains ingredients that blocks or diffuses the UV spectrum of the sun's energy. The most effective UV blocking ingredients for a wood stain are certain



types of pigments. Pigments provide the bulk of UV protection but the trade off is that they also change the color of the wood. Unfortunately, stains with higher levels of pigments ruin the natural look of the log by creating an artificial painted look.

That is why the majority of log home coatings are semi-transparent in appearance in order to keep the logs looking more natural. Clear coatings without pigments simply don't hold up or protect the wood surface for any significant amount of time.* There are clear supplemental chemical additives known as UV absorbers that if formulated properly and at the correct amounts can improve UV protection. The trade off with UV absorbers is the degree of additional benefit achieved compared to their considerable cost. In the end, however, you can't trick Mother Nature. Unfortunately, UV will degrade any type of protective wood coating (as well as many other materials) and is a major reason why additional applications of stain will be required periodically.

**Continental's answer to the demand for a Clear Log Home Coating with better UV resistance is a product called Super Natural. SN is a coating that when applied over lighter colored wood resembles the natural appearance of a clear coating without actually being one. Both Super Natural and WeatherSeal (our semi-transparent wood stain) are examples of Continental's commitment to providing high quality and innovative coatings for the Log Home Industry. Contact us about them.*

OTHER MAINTENANCE RELATED SUBJECTS

Sap Bleed

Many times homeowners forget that a tree was once a living thing and not some type of uniform widget. Each tree is an individual. As a consequence, there is always a degree of physical variation in each log. One of the

variations is the amount of pitch contained in each tree. Pitch is a gooey, sticky, resinous substance composed of a mixture of rosin, turpentine and other volatiles produced in pine trees and other conifers. When pitch "bleeds" or oozes out of the wood, it primarily occurs around knots although sap bleeding can appear in other areas of the log. Oozing pitch will penetrate right through a wood stain causing discoloration of the stain. It's amber color turns white when it dries. Often discoloration caused by dried pitch is mistaken as a color failure of the wood stain itself because the cause of the discoloration is not understood. Bleeding pitch can be dissolved with turpentine or mineral spirits. If it's hardened it can be sanded to the bare wood beneath. A hot air gun can also help to soften partially hardened resin and once melted the pitch can be wiped clean with mineral spirits or turpentine. After it is cleaned, the area can be touched up with the same color stain. However, there is no guarantee that it will not occur again. In fact, if it's a real active area that contains a large pitch pocket, expect to clean it periodically.

Borate Treated Wood

Log and outdoor wood items treated with Sodium Borate are vulnerable to rainwater and other sources of moisture. That is because Sodium Borate is a water-soluble mineral that migrates to any area in the wood that is wet. Consequently if borate treated wood is wetted, portions of the sodium borate salts within the wood will follow that moisture and leach onto the wood surface in the form of a powdery, crystalline residue. If left unattended, the borate salts will wash off the wood surface.

Note: Continental's two wood finishes, WeatherSeal™ and Super Natural™ are both designed to help stop such borate leaching by creating a moisture and weather barrier on the wood surface. It should be noted that WeatherSeal will actually replenish some of the borates that may have leached out of the treated wood because it contains almost 10% Sodium Borate (by wt.) once it has dried on the wood surface.

Skip-Peeled Logs

The charm and attraction of a hand-peeled log is due to the presence of varying amounts of cambium and bark that remain on the log surface. The proper maintenance of this type of surface does require a greater degree of attention due to the fact that the cambium and bark layers will eventually peel off the log surface exposing unprotected wood beneath. In addition, because of their impenetrable nature, cambium and bark is a more difficult surface for a wood stain to stick to. Medium to light sanding of this type of surface before applying a Log Home Stain will certainly improve the stain's adhesion and performance. As the logs shed their bark, exposed areas of bare, unprotected wood should be stained as soon as possible in order to protect the overall integrity of the surrounding stained surfaces.

Draw-Knifed Logs

Draw-knifed logs, like skip-peeled logs, use a special hand-held drawknife to carve and facet the log surface. However, unlike skip-peeled logs, most all the bark and cambium are removed. Because a draw-knifed log is faceted, somewhat like a diamond, multiple surface areas are created with small ridges at their borders. It is at these ridge areas, which form the edge of the facet plane, where the initial erosion of a wood stain usually occurs. Additionally, the faceted surfaces reveal different wood grain orientations as well as being situated at varying angles and uneven exposures to sunlight and general weather conditions. Sanding this type of surface first before applying a Log Home Stain will help improve the stain's overall performance and longevity because it allows for better absorption and adhesion of the stain.

Preserving the Natural Wood Look

The majority of log homeowners desire to showcase the beauty of their log home by preserving the natural wood look of their log exteriors. However, to continue to maintain the natural wood look, realistic expectations are needed. Transparent coatings, by their very nature, have their limitations because

they can never fully protect the wood surface against the powerful and destructive rays of the sun. Due to this limitation, ANY transparent/semi-transparent wood stain will degrade more quickly and have a shorter service life than a solid color paint or stain. Various and more costly resin technologies and chemical additives are now available to improve the protection and prolong the life of exterior transparent coatings and, if properly formulated, make a difference. Nevertheless, to maintain the natural wood look, certain sides of the building are going to wear more quickly (usually the southern and western exposures) and will need to be stained more often. To avoid a painted, artificial look, both WeatherSeal and Super Natural should weather to the point where, once cleaned and pressure-washed, a coat or two of new stain will restore what has eroded away, thus minimizing excessive build-up of previous coats. The time to apply a renewal coat will always depend on the condition and appearance of the stain. The secret to maintaining the natural wood look is to wait until WeatherSeal or Super Natural begins to show early signs of wear before prepping the surface and applying new coats of stain.

Making the Old New Again

To restore a fresh new look to older logs that have been stained numerous times, the old stain will need to be removed. Common methods for such a task are either to chemically strip or mechanically remove the coating. The quickest and cleanest process is to have the stain removed using a modified method of sand blasting called †*corn cob blasting*. This process substitutes finely ground corncobs instead of sand for stripping the log surface. Additionally, a corncob blasted surface, if properly done, provides a surface profile that will "hold" a wood finish better than any other wood surface preparation.

†*Corn Cob Blasting* is similar to sand blasting but instead of using the harder more abrasive sand as the blasting media, a cornmeal type media is used. CC blasting is used primarily to remove built up coats of stain or revive aged and weathered log surfaces by blasting away the weathered surface. An often overlooked aspect of CC blasting is the fact that the corn media is a plant product which is susceptible to being contaminated by molds. Should a home be blasted with contaminated corn media, then mildew growth can occur on the wood surfaces that the contaminated corn cob media has come in contact with. If a wood stain is applied to such a contaminated surface, mold can grow from the wood surface upward throughout the wood stain causing discoloration and erosion of the coating from the inside out. The only suitable remedy is removal of the coating. The most reliable method for avoiding this type of scenario is to sterilize the CC blasted log surface first before coating it with a wood stain. A very effective mold-killing sterilizing agent to use is a solution of 1 part liquid bleach and 1 part water followed by a thorough water rinse. Dusting the corn media off the log surfaces with an air hose and brush is also helpful and should be a required step prior to sterilizing. But dusting alone is not as foolproof as the additional bleach treatment.

Final Log Entry

This booklet has attempted to provide you with a greater understanding of wood and a working knowledge of log home maintenance. It is not intended to discourage you into believing that log homes are somehow more of a problem or require more maintenance than other types of wood sided homes. That simply isn't true. However, the unique aspect of most log homes is that the logs themselves are what make up the structural soundness of the building. Because of this, it is vitally important you have a clear understanding of how to care for them. This understanding will help to insure years of enjoyable, trouble-free, log home living. As the saying goes, "one ounce of prevention is worth a pound of cure." It is the hope of The Continental Products Company that this booklet has provided that ounce.

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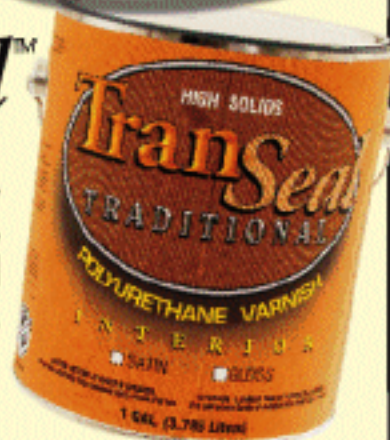
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