

## Waterborne Tech Tips

The **GreenLight Coatings®** product line includes waterborne wood coatings consisting of stains, sealers, and topcoats for the professional wood finisher. When used properly, these coatings will provide unsurpassed quality never before seen with waterborne coatings. To assist you in obtaining the best possible performance, the following tips are offered.

### General Finishing System Comments and Tips:

1. Water is unique and does not behave like conventional solvents! This implies that there will be an adjustment period required to “come up to speed.” Patience and practice will help achieve the full benefit of waterborne wood coatings. Although, in general, the same equipment can be used to apply the GreenLight Coatings® waterborne wood coatings, there are a few tips that will help:
  - a. Use stainless steel or suitable non-corrosive material for any wetted parts of the spray line or coating application equipment used.
  - b. Spray tips, tip pressure, and pot pressure will require adjustment to provide optimum performance and may not be the same as that used with other coatings used in the past. For start-up we recommend the following:
    - i. With a HVLP gun we suggest using a fluid tip and needle size of 0.035” - 0.055” (0.9 mm – 1.4 mm) and air pressure of 40 – 55 psi (2.8 – 3.8 bar) to the gun. Use a pressure pot of 9 - 12 psi (0.6 – 0.8 bar) to pressurize fluid.
    - ii. With conventional spray equipment, use a fluid tip and needle size of 0.035” - 0.055” (0.9 mm – 1.4 mm) and air pressure of 50 to 60 psi (3.4 – 4.1 bar). Again, a pressure pot of 9 - 12 psi (0.6 – 0.8 bar) is adequate to pressurize fluid.
    - iii. For airless and air assisted airless systems, use a fluid tip and needle size of 0.009” - 0.015” (0.2 mm – 0.4 mm). For airless spray use pressure of 1000 - 1500 psi (68.9 – 103.4 bar) and for air assisted use 400 to 750 psi (27.6 – 51.7 bar).
2. Grain Raise: YES - water raises wood grain, but it can be eliminated when using GreenLight Coatings® waterborne wood coatings! When using various coatings in the GreenLight Coatings® finishing process, you will experience grain raise, it is the strategy of the system to let the stains and sealers raise wood grain. In doing so, the sealer will “lock in place” raised fibers so that during the sanding process, a highly smooth, uniform surface is ready for topcoat application. After topcoating, no secondary grain raise is seen and a high-

quality finish results. Best finish results are obtained by practice and patience and it will be found that the system is simple, easy, and remarkably fast!

Wood moisture content will influence the degree of grain raise seen and, therefore, the potential effort necessary to achieve the quality desired. Maintain a constant storage environment for wood stock to help eliminate any finish quality variations.

3. Waste disposal: Check with your local sanitary treatment facility! They will evaluate materials for you in their effort to help you properly dispose of waste. Do not discharge any waste to a septic system or storm water drain regardless of how harmless you believe it to be! The EPA considers septic disposal as an underground injection and closely regulates discharges. Storm water drainage is also closely regulated. In the dry form, after water evaporation, the waste from GreenLight Coatings® waterborne wood coatings is not regulated and may be disposed of as normal solid waste. As a liquid it is quite common to find that GreenLight Coatings® waterborne wood coating waste material may be easily processed through municipal sewage treatment facilities - BUT CHECK FIRST!
4. Topcoats may be used as sealers. The cost will be higher, the sandability slightly more difficult, and there may be less of a “fill” effect, but the final clarity is usually better. It is recommended to first try the sealer and then evaluate the use of a “topcoat” sealer if higher clarity is still required.
5. Coating Application: All of the GreenLight Coatings® waterborne wood coating products have been designed to coat uniformly over most wood species even when using standard tack cloths. Machine oils and other surface contaminants can interfere with coating application, so take care to prevent possible contact with these materials.
6. It has been observed, especially in spray lines, that the GreenLight Coatings® waterborne wood coatings actually may remove residues of other types of coatings. During start-up, it may be possible to observe “chunks”, “slugs”, and other particulate deposits on the surface after drying. These are most likely to originate from residues in the fluid lines or tips from prior coatings used. The following procedure is recommended for switching from solvent to waterborne—First, empty solvent coating from system. Second, flush system with your cleaning solution. Next, flush system with IPA (isopropyl alcohol), or acetone. Then flush system with water. Finally, charge system with the waterborne coating. To go back to a solvent simply reverse the order.

When converting from one type of coating to another:



Make sure to cross the bridge to maintain coating stability.

7. Sanding: This is the critical step in finishing with waterborne wood coatings. The higher the grit used in pre-sanding, the better the smoothness of the final finish. It is advised to pre-sand up to a minimum of 150 grit and it is preferred to reach 220 grit. Apply primer or stain and sealer, and re-sand to 220 grit when completely dry (see below for dry times). It is recommended to always sand with the wood grain and, if using hand power sanders, to use a random orbit sander.

The application of one topcoat will be remarkably smooth and for many instances it will be sufficient as the final finish. A second application of topcoat, after light fine sanding, will further improve final finish quality.

8. Drying and Curing: Unless intended for forced IR or hot air drying, most GreenLight Coatings® waterborne wood coatings have been designed for ambient drying (room temperature - 70° F (21° C) and 50% relative humidity preferred). It is usually seen that dry to touch occurs in 15 to 30 minutes and full dryness within 1 hour, unless otherwise noted on the Technical Data Sheet.

Please take note that higher temperatures will speed drying and that higher humidity will slow drying. For best performance, if possible, maintain temperatures between 70° F - 100° F (21° C – 38° C) with humidity below 65%. The use of IR heated or forced hot air dryers and other process drying equipment may be used to accelerate the drying and cure of these coatings. Success will depend on the individual set of conditions determined by the finishing personnel.

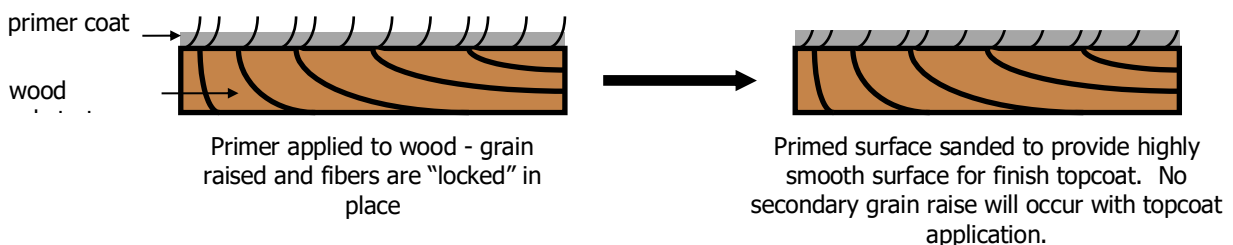
9. Clean-Up: Always flush the coating equipment and spray lines with clean water immediately after use! The GreenLight Coatings® waterborne coatings are specifically designed to be very durable and chemically resistant. Therefore, surfaces will be very difficult to clean if the coating residues are allowed to dry. In the event that certain surfaces are covered with

dried coating, it is recommended that MEK (methyl ethyl ketone) be used to clean the surface. Remember- SAFETY FIRST when using any cleaning solvent - use appropriate precautions and disposal procedures.

10. Storage: KEEP FROM FREEZING! It is recommended to store all GreenLight Coatings® waterborne wood coatings at temperatures above 50° F and below 100° F (10° C – 38° C).

### Primer Application Tips

1. Apply the primer to a wet thickness between 3.5 mil to 4 mil (0.0035" - 0.0040"; 89µ - 102µ). When dry this will permit excellent sanding without burnishing through the primed layer. Therefore, if the primer is burnished or sanded to bare wood, it is very possible that the prime coat was not thick enough. The use of a wet thickness gauge or tooth gage will be very helpful in achieving the correct primer application thickness.
2. If fish-eyes or repel spots occur, check for contamination on the wood surface. The GreenLight Coatings® waterborne wood coatings have been specifically designed to be tolerant of certain wood rosins/resins but may not coat well over machine or other types of oils and certain other contaminants.
3. The primer when dry may exhibit grain raise, especially with oak surfaces since this is a very long fiber wood species. THIS IS EXPECTED! The primer, like our sealers, will "lock" any raised grain in place and permit excellent sanding properties to remove any evidence of raised grain.



4. It is recommended to sand the dry primed surface with 220 grit media or finer. This will provide the smoothness quality necessary for superior topcoat application.
5. If difficulty is experienced in sanding the primer, due to poor dusting or it gums up in the sanding paper, the primer is probably not sufficiently dry. Dry for longer times or apply mild heat to promote drying (110° F or 43° C). Refer to the general drying recommendations above.

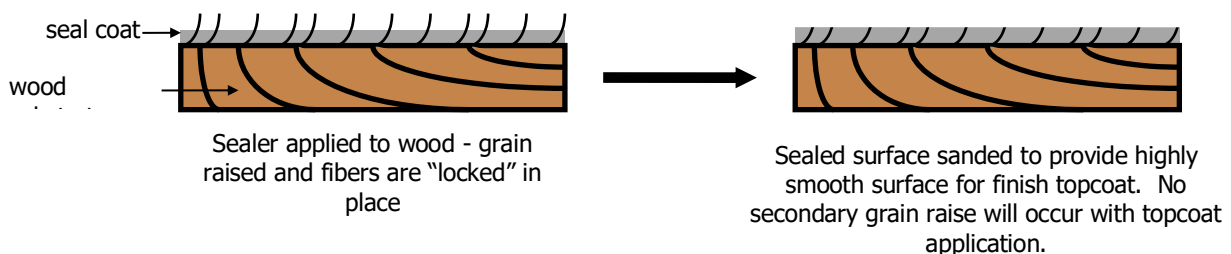
## Stain Application Tips

1. Stain up-take will vary by wood species and moisture content. Maintain a constant storage environment for wood stock to help eliminate any finish quality variations.
2. Apply stain to the desired color intensity. Multiple coats may be applied to develop darker shades.
3. Small parts and pieces are easily stained by a dip process followed by wiping, whereas larger pieces are more easily sprayed with stain followed by wiping.
4. Cracks and crevices are easily filled with stain during spray application, and when wiping the use of a sponge or cotton swab may be of help. These work great for difficult to reach areas.
5. Bubbles that, at times, form on the surface may create spots or voids where stain does not color. Take care to avoid bubbling or foaming and if it occurs, voids are easily eliminated by wiping with a stain soaked cloth or sponge.
6. Always wipe stains using a lint free cloth.
7. Color Variation: Should color variation occur, there are a few possible reasons.
  - a. All GreenLight Coatings® waterborne wood stains should be mixed well before use to ensure uniform color.
  - b. Examine the color of the wood substrate. Since wood is a natural product, it is common to see color variations that will influence the final stained appearance.
8. When staining large areas, difficulty may be experienced due to the fast-dry time of the stain. It is recommended to apply a heavier stain application to offset times where the stain dries too fast. This will help to permit uniform application of stain. The GreenLight Coatings® line of wood coatings also offers slow dry stains that have been designed for large surface applications.
9. Application: The GreenLight Coatings® waterborne stains are applied by numerous techniques including dip, spray, wiping, roller, etc. Other applications may also be used.

## Sealer Application Tips

1. The sealer may be applied over GreenLight Coatings® stains immediately after wiping to the final color intensity. This is termed a “wet on wet” application technique.

2. Apply the sealer to a wet thickness between 4 mil to 6 mil (0.004" - 0.006"; 102 $\mu$  - 152 $\mu$ ). When dry this will permit excellent sanding without burnishing through the stain coat. Therefore, if the stain color is burnished or sanded to lighter shades during seal coat sanding, it is very possible that the seal coat was not thick enough.
3. As a visual aid to correct wet sealer thickness, when applied correctly, the sealer will appear bluish-white and should not have any pockets, dimples or fish-eyes. The wood grain should be barely discernible through the wet applied coating. Just remember, the sealer WILL DRY CLEAR.
4. If fish-eyes or repel spots occur, check for contamination on the wood surface. The GreenLight Coatings® waterborne wood sealers have been specifically designed to be tolerant of certain wood rosins/resins but may not coat well over machine or other types of oils and certain other contaminants.
5. The sealer when dry will exhibit grain raise, especially with oak surfaces since this is a very long fiber wood species. THIS IS EXPECTED! The sealer will "lock" any raised grain in place and permit excellent sanding properties to remove any evidence of raised grain.



6. It is recommended to sand the dry sealed surface with 220 grit media or finer. This will provide the smoothness quality necessary for superior topcoat application.
7. If difficulty is experienced in sanding the sealer, due to poor dusting or it gums up in the sanding paper, the sealer is probably not sufficiently dry. Dry for longer times or apply mild heat to promote drying (110° F; 43° C). Refer to the general drying recommendations above.

### Topcoat Application Tips

1. The GreenLight Coatings® topcoats include an all acrylic system, an aromatic polyurethane based system, and a non-yellowing aliphatic polyurethane system. They provide excellent topcoat quality with the urethane systems superior in abrasion and chemical resistance.
2. KCMA standards can be met with the acrylic based topcoat and the aromatic and aliphatic urethane based topcoat. The waterborne urethane topcoats contain an internal crosslinking mechanism and meet KCMA standards without the addition of a crosslinker.

3. Crosslinker use in the GL-4850 aliphatic urethane topcoat will speed up hardness development of the appropriate topcoat and will permit earlier stack times. The use of the GL Cat-115 crosslinker increases water and chemical resistance as well as adhesion properties. The crosslinker remains effective for 0.5 to 1 hour upon addition to the topcoat. After this time, the unused portion of the topcoat will exhibit gel properties and may not be used.
4. It is recommended to apply the topcoats to a wet thickness between 3 mil to 6 mil (0.003" - 0.006"; 76 $\mu$  - 152 $\mu$ ). As a visual aid to correct wet topcoat application, when applied the coating will appear orange peeled this will however dry smooth.
5. Again, if the final coating surface is not uniform, check for surface contaminants on the wood substrate and any possible contaminants from the application equipment. Spray hoses must have a minimum of compressor oil and, as discussed above, it has been noted that residues in the fluid lines have been "cleaned" and removed with the use of the GreenLight Coatings® waterborne wood coatings.
6. With a pre-sanding to 220 grit one topcoat application is sufficient for quality results. Two topcoat applications will result in exceptional surface finish quality.