

Graham Paint/ 773-585-9110

## Coating wood can be a knotty issue

Applying coatings to wood is one of the most common applications of paints, stains and varnishes. Wood has been used throughout buildings both interior and exterior for literally thousands of years. With proper care, wood can last for hundreds of years. With improper care, wood can deteriorate in just a few years.

Wood has three natural enemies, UV light, insects and microorganisms. Wood is composed of wood cells. The cell walls are hard and give the wood its strength. These cell walls can become damaged from the effects of UV light or decay through the work of microorganisms such as mold, mildew or bacteria. A good coating

regularly maintained will keep the wood intact.

There are many different species of wood and, since the world has gotten smaller, many foreign wood species are now used in the USA. Fortunately, most of the woods can be finished without difficulty.

*Note: You may have seen some of the material in this letter in previous training letters. We feel some subjects are so important they should be repeated.*

## Exterior wood finishing-Tannins

A few woods such as cedar and redwood contain large amount of tannins. These tannins are water-soluble and will come up through a water-based coating forming a brownish colored stain commonly referred to as a "tannin stain". Incidentally, these same tannins help to prevent attack from microorganisms.

An oil-based primer will always prevent tannin bleeding into the topcoat. A latex based stain will quite often but not always prevent tannin bleeding into the topcoat. With latex based stain killing primers, the tannins will sometimes migrate into the primer and the primer will show discoloration. If this is the case, let the primer dry overnight before top coating. Do not topcoat without letting an

overnight dry time. Quite often, the tannin will be bound chemically in the primer and won't migrate into the topcoat.

However, there are some woods where the tannins will leach through the latex primer into the topcoat. This will generally occur within an hour or so after application.

You should tell the customer to watch for this bleed through before they get too far into the job. A good idea is to paint a small area with topcoat and wait an hour or so. If the tannin bleeds through the whole job needs another coat of primer with an overnight dry before the topcoat is applied. Latex primers work fine most of the time but painters should stay observant. Oil primers work all the time.

## *Exterior-Fuzzy wood fibers*

A major failure of exterior wood painted surfaces is the presence of fuzzy wood fibers when the wood was painted. Paint sticks very well to these fibers, but the fibers pull loose from the wood substrate taking the paint with them. Peeling occurs.

Power washing usually causes this fuzzy condition. Power washing decks and siding is a great way to get off dirt and old coatings, but it does degrade the wood and cause little wood fibers to appear. This condition occurs with all types of wood. The pressure is strong enough to erode the wood leaving the

You can see the punky material under your fingernails. Paint isn't going to adhere to this surface.

It is surprising how fast new wood will degrade in the sunlight. The National Forest Wood Laboratory in Madison, WI has determined that significant differences of paint longevity can be measured when wood is painted as soon as it is installed versus waiting two weeks after installation before painting. *Tell your customers to paint new wood as soon as they can after installation.* Even better, tell your customers to paint the wood before they install it. By doing

surface coated with fuzzy wood fibers. A simple test for these wood fibers (other than simply feeling or seeing them) is to rub a piece of clear cellophane tape firmly on the wood and then remove it quickly. If there is a lot of fuzzy stuff on the tape, there is a good chance a coating will come off as easily as the tape did.

Another way the surface of the wood degrades is from the UV rays of the sun. The sunlight contains UV rays; the same ones that will give you sunburn. The wood doesn't get sunburned, but surface of the wood is degraded and the cell walls become weak. You can feel this condition by running your fingernail over the surface.

this they can paint all six sides of the wood which will extend the life of the coatings by a considerable amount. One of the principal reasons coatings on wood fails is because the wood gets wet, degrades due to microorganism activity and the paint peels off the rotted wood surface. Painting on all sides helps the wood from absorbing water. Obviously, wood should not contain excess water before painting. Paint doesn't adhere to wet wood very well.

*Fuzzy wood fibers prevents good paint adhesion*



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*Rub a piece of Scotch tape in the wood and pull off quickly. There should not be this many wood fibers on the tape.*



*“Don't tell me we have to sand!”*

**We have to tell you, you have to sand.**

There isn't any way around it. If the surface of the wood is degraded, the degraded surface **must** be sanded down to sound wood. Paint will eventually fail on wood that is not sound and it will fail considerably earlier than paint on a sound surface. No one likes to sand let alone sand large areas, but it is the only way to assure a good job and maximize durability. Usually, 80-grit sandpaper will work fine. It is important to apply a coating as soon after sanding as possible. Omitting sanding when it is required is a sure road to disaster.

## *Water, water everywhere, should I paint?*

Even though latex paints contain water, it is never a good idea to paint wood that is too wet. In the Midwest, the desired wood moisture content generally should be 8-12% water for interior applications.

For exterior applications, up to 15% moisture is generally acceptable.

If the moisture content is higher, the wood will try to get rid of the excess moisture. Often, the moisture escapes right through the coated surface.

Usually, it takes the paint right with it resulting in peeling. Peeling is the single biggest complaint we hear about exterior coatings. Most of them are caused by

Dry wood is not a very good conductor of temperature. Wet wood is a very good conductor of temperature.

this moisture escape from the wood. Most of the time the moisture comes through the walls from the inside of the house and then through the siding and blisters the paint off. If the wood is painted wet, the same thing happens.

Many woodworkers use a rule of thumb method for determining if wood is dry enough to paint. They place the wood on the outside of their lower lip. If it feels dry at ambient temperature, the wood is ok to paint. If the wood feels damp and cold, the wood is too wet to paint.

Before you dismiss this method as an old wife's tale, take note that there is a scientific basis for the test. Dry wood is not a good conductor of heat. Wet wood does conduct heat much more readily. The wet wood draws the heat from the lip making the lip feel cold. Dry wood doesn't draw out the heat from the lip.

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*"Just give it a little lip!"*

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## *Interior wood considerations*

When finishing wood with clear finishes, such as Ceramithane, a water based acrylic-urethane finish, great results can be obtained by following a few simple rules. Although Ceramithane can be used over oil-based stains, the oil based stains must be dry. If the stain is not dry, poor adhesion will result. Generally, if the stain feels good and dry to the touch, it is OK to apply Ceramithane. Please note that not all water based clear finishes can

be used over oil-based stains; in fact, most water based clears don't work well over oil based stains. Ceramithane does work fine over oil-based stains.

All water based clear products will raise the grain on bare wood. If the wood is sealed from the use of a solvent based sealer or oil based stain, the grain will not be raised. Grain raising only occurs when water based coatings are applied directly to the bare wood. A light sanding after the first coat will remove the fuzzy wood fibers.





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Subsequent coats of the finish will not further raise grain so sanding between coats is not essential. However, a better job will almost always be obtained if each coat is sanded lightly. It is very difficult to apply coatings in a house and not get air borne dust from landing and sticking to the wet finish. A light sanding removes this dust.

It is always a good idea to use the gloss clear finish to build up coats and only use the Satin or Matte finish as the very last coat. Satin and Matte finishes contain a small amount of white pigment to give them the desired sheen. Multiple coats of these pigmented finishes may result in a cloudy appearance

Although the desire is often strong to put as many coats of water based clear finishes on a job in one day as one has time for, it is always better to make sure the coats are thoroughly dry before recoating. No more than two coats of Ceramithane should be put on in one day. Ceramithane dries not only by water evaporation and coalescing as regular latex does, but it also cross-links chemically with itself. This cross-linking is what gives Ceramithane its toughness and chemical resistance.

to the finished job. This is particularly true over dark stains. This advice applies to all interior clear finishes, both water-based and oil-based.