

## **Staining Blotch-Prone Woods and End grain**

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Evening out the finished colour of wood can be difficult because some species have random, ugly dark blotches that come from uneven stain absorption. End grain will also soak up way too much stain and look unsightly, too. This is a quick look at some ways to achieve even colouring by preventing or getting around colour absorption problems.

In attempting any of the following procedures below, be sure to wear eye protection and protective gloves. Otherwise, you are exposing yourself to unnecessary risk. When using some products like lacquer, additional protection is required - see the manufacturer's MSDS and tech sheets for proper handling and safety measures. Read and follow all product labels with regard to additional safety information. Wood finishing is an inherently dangerous pursuit.

### **Blotching**

Pine, cherry, birch and aspen are some of the more common species of wood that usually present a problem when trying to colour or stain. Some apparently random areas on the surface of the wood drink up a whole lot more colour, leaving dark blotches. The blotches do not relate to figure, or a wood feature like knots. Blotching seems to be proportionally worse when using a very dark dye or stain. Blotches can really ruin the appearance of an otherwise nice finish.

Most of the workarounds presented below have shortcomings, mainly that all of them involve extra cost or extra effort. None are a complete guarantee against blotching, but they do represent a big step towards a great finish.

### **Workarounds for colouring blotch-prone wood:**

- Wash coating
- Gel stains
- Toning
- Dark shellac
- Glazing
- Chemical treatment

No matter which of these you select, be sure to TEST the effect on scrap before you attack your project. You may need to use more than one method to get premium results.

## **Wash coating**

Wash coating means applying a low solids film to raw wood before any colouring steps.

The film plugs up the thirsty wood fibres, and tends to reduce blotching.

The best product for wash coating is blonde dewaxed shellac. Use one-half pound cut shellac. Most canned shellac is not dewaxed and flake shellac almost always indicates on the label if it is dewaxed or not. Pound cut means that you have x lbs. of flakes in 1 gallon of solvent.

To mix a small amount of flakes to approximately this concentration, try:

1. Get a clear glass jar. Make a mark about 1/3 of the way up the side of the jar. Make a second mark about 2/3 of the way up the jar. Fill the jar to the first mark with flakes
2. Dump the flakes into another dry jar for temporary storage.
3. Fill the jar to the second line with solvent like denatured alcohol.
4. Add the flakes back into the jar slowly with agitation.
5. Let the jar sit overnight with an occasional shake

Most canned shellac is 3 pound cut. Simply dilute the shellac 1 part shellac to about 5 parts solvent to get pound cut. Be sure to dewax the canned shellac. Let it sit for 2-3 days, then decant off the clear stuff. The cloudy stuff at the bottom is wax. Pitch it.

Apply the shellac with a soft rag; let it dry for about 2 hours, then sand lightly with 220 grit paper to remove nibs. Remove the dust. Apply any stain or dye, even water-base products over the shellac wash coat. Follow the product label instructions for raw wood.

## **Gel Stains**

Gel Stains, for example Bartley's Gel Stain, are thick and do not penetrate into wood fibres. Therefore, they are very resistant to blotching. But there is a downside. They provide a much paler ground and do not tend to enhance grain the way some other stains do. Additional coats of gel stain do not have any appreciable darkening effect. If you want a fairly light colour with very little grain emphasis, this may be the way to go. Later on in finishing consider glazing over this light ground to create a darker overall colour - see Glazing below. Toning (below) will also darken the base colour.

## **Toning**

Toning means to apply a transparent coloured film. Most

commercial toners are lacquer-based. They require spray equipment.

The idea here is to seal the surface with a clear coat of lacquer, sealer, or shellac. Then, apply several light coats of toner until you have the desired colour. If enhanced grain is required, then try a drying oil as the first sealer coat (to pop the grain), and then apply dilute shellac as a barrier coat followed by toner coats. Examples of drying oils are tung oil and boiled linseed oil.

### **Dark Shellac**

As with toners, first apply a coat drying oil if you want to pop the grain. Then apply any of the dewaxed dark grades of shellac to add colour, somewhat like using a brush-on toner. Select the grade to add the colour required. The shellac acts as a sealer if there is no oil coat. The grades of shellac from darkest to lightest are:

Seedlac - dark brown

Buttonlac - brown to reddish brown

Garnetlac or Ruby shellac - light reddish brown

Orange shellac - carrot orange to amber

Lemon shellac - pale yellow to orange yellow

Blonde shellac - slight amber tinge

Note: the colours of these grades vary from supplier to supplier. The colour strength per coat is not that great, so several coats are almost always needed - an advantage.

Also, consider adding SMALL amounts of alcohol-soluble dye to any of the above grades of shellac. This allows you greater flexibility in colour control, in case you need to match an existing colour.

Be sure to dewax the shellac first. Then brush it on at about a one-pound cut.

A soft cotton rag ball also works well. Try to sneak up on the colour you want by adding several coats, rather than trying to get all the colour from one dark coat.

This works especially well for cherry, which already has some colour and requires fewer coats to get to a reasonable colour than lighter woods like aspen and pine.

### **Glazing**

Glazing stain is a thick, wipe-on, heavily pigmented finish, usually very dark.

Apply the glaze over a sealer or a toner, not to raw wood. Glaze has very little binder. It needs to be covered with a barrier coat of one-pound shellac before applying any kind of topcoat. Another function

of this barrier coat is to penetrate the whole glaze layer and bind it to the substrate - it nails down the glaze layer and prevents subsequent coats from loosening it. Obviously, glaze can't be the standalone topcoat or it all rubs off right away.

Glazing stain is available either as either pigmented or natural colour glazing stain. Add wetted pigment to the natural glazing stain if you need a colour that is not available off the shelf. Wetting pigment means pre-mixing the pigment in the appropriate solvent before it goes into the glazing stain. Mix pigment and thinner into a thick slurry or thin paste, then slowly stir the goo into the glaze.

Glazing is very easy, and completely reversible. Apply the glaze evenly to the surface with a cheap brush. Let the solvent flash off for about 5-10 minutes. Then, start wiping away colour with a coarse rag until you get the look or colour required. If you don't like what you have, you can wipe off all of the glaze and start over. No harm done.

You can also even out ground colour differences in the glazing step, by removing slightly more or slightly less glaze in certain areas. This is best achieved by using a dry soft brush to lift off small amounts of glaze in small areas. Keep the brush clean by wiping off glaze build-up frequently.

Let the glaze cure for a few hours, then apply the shellac barrier coat, then several clear topcoats. Glaze is really intended to darken already existing colour, not create all the colour by itself. Consider adding a little base colour to the finish at some earlier step if you want the glaze to be more effective. Really thick glaze is opaque. Thin glaze works much better in my opinion.

### **Chemical Treatment**

Colouring wood by exposure to sun or chemical agents another way to colour wood. It gets around blotching problems by creating colour another way.

'Sunburn' and lye application are two ways to simulate the effect of aging on cherry.

Finishing professionals sometimes use either of these practices to get simulated aged cherry wood for repairing old furniture when real aged cherry is not available.

Raw cherry will 'sunburn'. Work only with unfinished wood. Direct sunlight causes blistering in new finishes. Be sure to provide a way to allow complete, even exposure of the piece to sunlight. 3-4 hours exposure in midday sun is the maximum required.

Cherry also darkens on exposure to a strong base like lye (sodium hydroxide). Brush on a weak lye solution (1 tablespoon of lye per quart of water). Let it dry. Wash off with water, then neutralize with a solution of vinegar (3 tablespoons per quart), then wipe clean. Let it dry. You will get slightly different results on different pieces with this procedure, as it is hard to standardize. This procedure also raises grain considerably. Consider sponging and sanding prior to applying lye to eliminate grain raising problems. You can repeat the process for more darkening, if needed.

Most species of wood will react to a potassium permanganate solution by turning various shades of brown. This method is similar to using lye on cherry, but doesn't require neutralization.

You can add tannins to any wood by drenching it with a strong tea solution. After the solution dries off thoroughly, wipe it down with a dilute iron acetate solution. This will create some wonderful colours, especially in pine. Colours range from silver grey to dark black-brown, depending on the concentration of the tannins. To make iron acetate, soak oil-free steel wool in a white vinegar solution (1/4 cup vinegar in a quart of water) for 2-3 days.

Old Growth has several stains and 'aging' agents for wood. There is a mineral solution followed by a catalyst solution. This system works well for creating different effects and behaves somewhat differently with each species of wood. It also creates colour several millimetres deep into the wood, which most other treatments and finishes do not accomplish. This means you can still sand somewhat aggressively after colouring with this product. It is a rather pricey product, however.

All of these chemical treatments work on raw wood only. Further finishing steps need to follow for a good quality finish.

### **End grain**

Staining end grain, like on tabletops, usually results in an excessively dark ground colour on the end grain itself. This is because the grain is able to soak up colouring much too fast compared with the rest of the wood surface.

There are two classic ways of slowing down absorption of colour into end grain:

### **Shellac wash coat**

This is similar to the wash coat discussed above. The only real difference is that you should test different levels of wash coating to get the end grain to match the rest of the piece. Get a piece of scrap with a lot of fully sanded end grain. Apply one coat of shellac

wash coat to the whole end grain area. Let it dry. Apply a second coat to one-half of the area, so that half of the grain has a double wash coat. Let it dry for 2 hours, sand gently, and apply stain. Evaluate which level of wash coating best suits your needs. Sometimes, three or more coats of wash coat may be appropriate, especially for woods like aspen.

### **Dilute linseed oil**

Dilute boiled linseed oil with turpentine (1:2). Turpentine is a better choice because it helps to speed drying the linseed oil. Apply the diluted very carefully to end grain only. If you apply it elsewhere by accident, it will have the same retarding effect on staining - just where you do not want it. The oil will darken the end grain somewhat, so this method will not work for stains that are essentially lighter than the colour created by the linseed oil application. The more you dilute the oil, the less effect on stain absorption there will be, just like adjusting the wash coat density. Experiment.

### **Sources:**

**Canned Shellac** - any home centre like Lowe's or Home Depot

**Shellac Flakes** - mostly via mail order from [Woodcraft](#), [Garrett-Wade](#), Woodworker's Supply, and Homestead

Finishing Supplies

**Lacquer Toner** - from the mail order houses above, Sherwin-Williams, Diamond Vogel, and any other professional paint supply shop in your area

**Glazing Stain** - from any good paint store, many home centres, and professional paint supply houses.

**Potassium Permanganate** - from chemical supply houses, like Fisher Scientific

**Lye** - any grocery store

**Old Growth Stains and Aging Products** - Woodworkers Supply

**Pigment** - usually as fresco pigments from the mail houses above, Kremer

Pigments, [Sinopia](#)

**Aniline Dye** - from the mail houses above, professional paint supply

**Linseed oil, tung oil (pure tung oil, not oil finish), and turpentine** - from almost any of the above sources.