

## Colouring Wood

presented by Ed Pretty

### **Colouring wood:**

- creates a unique piece
- match décor
- highlights figured grain
- creates contrast within a piece
- create illusions within a piece
- a vehicle for your personal expression

### **Methods of colouring**

1. Stain – blocks light – topical only
2. Dye – penetrates – doesn't block light – penetrates – highlights figure
3. Chemical reaction – topical – very topical
4. Liming – highlights grain shape and direction
5. Bleaching – lightens wood – somewhat topical
6. Faux finish – less colouring than it is altering

### **Stain**

OK to use but I'm not a fan. Colours but subdues grain and figure significantly. Large pigment particles don't allow penetration and block light.

### **Dye**

- Dye accentuates figure by penetrating at different rates (grain direction within the figure)
- Dissolves completely so penetrates further and doesn't block light
- Anilines are organic petroleum oxides
  - Notorious for poor light fastness
  - Probably are no longer made. Manufacturers use the name because that's what people recognize (i.e. Kleenex). You have no idea what dye base is being used when you use anilines.
- Dichlorotriazine dyes (Procion MX)
  - most colour fast
  - compatible with cellulose fibers like cotton, linen, bamboo and rayon (actually derived from plant fiber), silk and ... wood.
  - no fixing required as when used with fabric (not being washed)
- Metal Oxide dyes (Procion, Trans Tint)
  - Are compatible with synthetic fibers and wool
  - Not compatible with wood fibers
- General fabric dyes (i.e. Rit)
  - Unsure of colour fastness
  - May not be compatible with cellulose

- Enhance with finishes
  - Penetrating finish required to “pop” figure (chatoyance)
  - Topical finishes (lacquer, acrylic, shellac) provide less drama
- Can be applied in multiple layers for varied effects
- “Sanding back” produces varied effects

### Chemical reaction

- Reaction between chemicals in the wood and an applied chemical alter the colour
- “Ebonizing” – fancy term for making wood black ☺ or “pickling”
- Tannin in wood reacts chemically to darken wood surface
- Oak, black walnut, acacia have high tannin content however most woods will react to some degree
- The effect can range from turning wood almost black to a soft, weathered grey depending on tannin content
- Fuming – ammonia (industrial strength – not household strength)
  - Fuming darkens wood
  - Fuming can darken wood after a stain or dye has been applied (George Frank – Adventures in Wood Finishing)
- Iron sulfate (in water) or iron and vinegar (forms iron acetate) both react with tannin in the wood
- Note that iron (steel wool) and vinegar forms iron acetate and hydrogen while reacting (caution: ignition hazard). Make sure you have adequate ventilation so that fumes do not accumulate.

### Liming

- Accentuates grain pattern by following grain lines
- A grain filling technique
- Liming traditionally uses a white filler (pigment, not lime)
- I now use Golden Open acrylics. Allows limitless range of colours. You must use the “Open” line of colours because regular acrylic dries too fast.
- Requires ring-porous or semi ring porous woods for best results
  - Oak, Ash, Chestnut, Hickory, even acacia
- Diffuse-porous woods only look messy
- Order of business: Colour or stain if desired (prior grain raising may be required), finish with desired finish to seal colour, apply coloured grain fill.
- Accentuates flaws exponentially!

### Bleaching

- Wood bleach required.
  - Wood Kote’s “Lighten Up” from any place that sells Mohawk products
  - See USDA handout
  - Google “bleaching wood” for homemade bleaching formulas. Most chemicals are readily available at pool supply stores.
- Process:
  - Raise grain first. Too much post-sanding goes through bleach layer.
  - Apply bleach – reaction not complete until wood is dry
  - Apply additional coats if lighter colour desired

- Use prior to application of lighter dyes: yellow in particular.

## **Faux finishes**

- Not really colouring the wood but adds interest
- Includes:
  - Patination of applied metal paints (copper and iron)
  - Crackle finishes
  - Gilding
  - Any faux technique used when applying painted finishes.

## **Chemical applications**

Please read: A word of warning below.

Long before there were man-made stains found on our hardware shelves of today woodworkers discovered that chemicals could change the color of wood. These chemical stains react with those present in the wood to form compounds that add color or ...here's the part you all should like.... an aged appearance.

Two of these three chemicals can be purchased as powders with the exception of iron buff and dim water. A good starting point is 1 oz. powder (by weight equals roughly 2 tablespoons) to 1 qt. water. Allow the solution to cool to room temperature and strain the mixture to remove any residue. Apply the same way as a water based stain flood the surface liberally with a bristle or foam brush. NEVER SPRAY A CHEMICAL STAIN. Wait at least 4 hours for the color to develop if another coat isn't needed rinse the wood with clean water to remove any residue. if desired you can smooth the raised wood with 220 grit sand paper.

Ferrous sulfate also known as iron sulfate or copperas turns most woods a light weathered gray, it can be purchased as dry granules at Earthguild.com or 1-800-327-8448 it will react with the tannins in the wood to form iron compounds similar to gray/black stains visible on wood that been in contact with iron. It works well producing grays on most species, a color difficult to obtain with dyes and pigments.

Iron buff produces grays and blacks, the simplest way to make Iron buff is to shred 1 oz steel wool (one pad) into 1 pt. white vinegar. Mix the solution with an open container allowing the hydrogen-gas to escape. I the strain the liquid through a coffee filter to remove all steel particles. Leaving the steel in the vinegar for 1 day creates light grays on tannin rich woods such as oak, cherry, and walnut. Leaving the steel in the vinegar for a week produces color ranging from dark gray to a deep blue or black. You can experiment yourself as you go along.

Sodium carbonate is not as strong as lye, but it's much safer. It works well duplicating the yellowish brown patina caused by photo-oxidation from sun and air exposure. Again start with a mix of 1 oz washing soda to 1 qt. water and increase or decrease the amounts to get the desired effect.

I have used these stains on Mahogany, white oak, ash, maple, cherry, and pine countless times with wonderful results. They are easy to make and again the type stains our fore fathers made and used, and the aged factor will surprise all of you that haven't tried it.

**A word of Warning!** The chemical ingredients in some of the products listed above can be hazardous and must be used with caution! Wear rubber gloves, a face shield, and a mask if required. Open the window and put on the fan. Follow the manufacturer's instructions to the letter. Make sure you keep these agents in a well secured, safe lockable cabinet. Keep away from pregnant women, kids and pets. Accidental overdose of products containing iron is a leading cause of fatal poisoning in children under the age of 6. Keep this product out of the reach of children. In case of an accidental overdose, call your doctor or a poison control center immediately. In other words, use your common sense! I'm not trying to scare you, but just use a little precaution when using and or mixing certain chemicals agents.

## **Sources**

1. Procion MX: Opus and Maiwa (Granville Island and on line)
2. Wood Essence: Colour FX. On line (Saskatoon)
3. "Aniline" dye: Lee Valley

4. Trans Tint dyes (metal oxide) : Craft supplies
5. Iron sulfate: nurseries – separately or major constituent in moss killer
6. Ammonia: chemical suppliers or blue printers
7. Lime wax: Woodchuckers and Craft Supply (both on line)
8. Golden Open. Most art stores. Opus, Michaels
9. Wood Bleach: “Lighten Up”. Any Mohawk supplier. Some hardware/builder supply stores also supply other brands
10. Various faux finishes
  - Crackle glaze: Benjamin Moore or Windsor Plywood (Titebond Liquid Hide Glue)
  - “Faux Metal” paints and patination applications: Opus, other art stores
  - Gilding foil, size and glue: Opus and other art stores (this foil is not true metal)