

Finishing Options for Woodturners

By

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Summary

- Great finish won't hide bad work or preparation
- No finish is perfect for everything
- Use, Design and Specie determine the finish
- You cannot get a great finish in poor environment
- Pick 3 finishes, buy in small quantities and master them
- Food Safe in 30 Days

Use, Design and Specie

- Use ranges from daily use items to those in a glass case. Think about how often something will be touched, used, washed, dusted and banged around. Gloss isn't conducive for heavy use.
- Gallery piece to kitchenware that is the spectrum
- Does your finish or gloss level accentuate or fight the design of the work? (What statement does a high gloss finish make on a natural edge bowl?)
- Open and closed grain woods respond differently to some finishes and don't fight naturally oily woods with an incompatible finish. If the wood has high figure an oil is a must (sorry)!
- Do you care if the finish changes the color of the wood?

The 800 Pound Gorillas

- Every finish manufactured in the US or UK since 1978 is food safe when fully cured
- Mineral oil should NEVER be used as a finish on raw wood
- Most people pick too glossy of a finish for work and inhibit use of the piece
- Polyurethane, although a great woodworking finish, is a poor finish for most wood turning

Factors in Choosing a Finish

- Enhance beauty of the wood
- Protection and longevity
- Ease of application
- Environmental considerations
- Shelf Life
- Repairability

The Four Finish “Families”

- Oils
- Surface Finishes
- Hybrid Finishes (blends)
- On the Lathe Finishes and Polishes

Oils

- Hardening vs. non-hardening oils (hardening is good, non-hardening is bad)
- Non- hardening-- mineral, peanut, olive, corn, vegetable, soybean
- Hardening-- walnut, boiled linseed oil, Tung, Danish, gun stock oil,
- Penetrates wood to enhance grain, “pops” figure
- Imparts color change (darkens) most woods
- Pools and bleeds in some open pore woods
- Works in dusty environments and is relatively foolproof (Tung oil being the exception)
- Some “wear” better than others but none offer complete protection from all contaminants
- Low to medium gloss depending on surface preparation and number of coats
- Easily cared for, renewable and very repairable

Surface Finishes

- All are comprised of a “vehicle” (what makes them flow) and a “solid” (what is left behind when they cure). We think about surface finishes based on the solid, but both matter.
- Surface finishes include Polyurethane, Shellac, Lacquer , Water Based Finishes and Acrylics
- Polyurethanes:
 - Available, durable and predictable, every level of gloss is available
 - Mineral spirits based vehicle
 - Thick from the can and may look “heavy”, and sag in detail and as drying
 - Looks and feels like “plastic”
 - Long open time can allow surface contaminants to enter finish
 - No real penetration into work, needs mechanical bond to wood (180 -220 max sanding)
 - Not very food friendly, , fails if washed, can “stick” to painted surfaces if left too long
 - Not repairable if damaged
- Shellac
 - Green, organic and “earthy”, uses alcohol as vehicle
 - Comes in clear through amber shades
 - Very short shelf life
 - Binds with any unwaxed finishes (but may itself contain waxes so look out)
 - Not renewable but repairable
- Lacquer

- Imparts little color, does not hide grain or get “muddy”
- Environmentally unfriendly and lacquer thinner vehicle is flammable and a respiratory risk
- Predictable finish that build in layers, many gloss levels and can be buffed to very high shine
- Dries very fast so minimal contaminants enter the finish, but will “blush” in high humidity
- Short shelf life, not food friendly, does not respond well to washing
- Not renewable, but can be repaired with some effort
- Water Based Finishes
 - Use water as a vehicle so may raise grain
 - Impart minimal color and come in several gloss levels, dries very fast, may seem “washed out”, very durable and hard wearing
 - Looks and feels like “plastic”
 - Environmentally friendly
- Acrylics
 - Artists turn to them first
 - Wide range of products, features and gloss options
 - Imparts no tint, very clear, very durable
 - Very quick drying times and low environmental concerns
 - Not food friendly and does not hold up to washing
 - Not renewable or repairable

A note on wax, its a great top coat but not a great stand alone finish

Blends

- Try to take characteristics of oils and surface finishes and combine traits
- Most blends are designed for some other purpose (flooring or furniture) so may not be a perfect match of viscosity, shelf life, and workability for woodturners
- Watco Danish oil, Osmos, Tru Oil, hard wax oils, oil wax finishes, Odie's oil, Tried and True, Butcher Block finish, Salad Bowl Finish, many “tung” oil finishes, Walrus Oil, Howards “restore oil”, Maloof's finish, Arm R Seal, Trewax.....
- Most mix an oil (careful some use mineral oil, avoid these) with either a wax or a resin (think polyurethane, although in this setting that is fine)
- Some have very short shelf life and will harden in the can or jar before half empty as they cure when exposed to any oxygen, making them far more expensive than anticipated
- Most are easy to use, cure well and are very compatible with food use when cured
- Most are renewable with an oil topcoat, handwash well, and are repairable

On The Lathe Finishes

- Instant gratification and speed, but with the trade off of durability
- Issue --how long before the vehicle evaporates, friction finishes use heat to burn it off
- Alcohol (spirit) and Lacquer (cellulose) vehicles frequently used
- Wax overcoat often used to impart short term gloss
- Very repairable and not very durable
- CA Finishes and others (e.g. water modified polyurethane)
- Application
 - Cover ways and everything else
 - Use paper towels (or pen part bags for CA) to apply
 - Slow speed for application, high speed for curing
 - Use a sanding sealer
 - Start at one end and push the finish across the piece
 - Stop the lathe, check the work, and fix problems

Surface Preparation

- An integral part to an overall process, not an annoyance
- Finish does not hide tear out, sanding scratches or poor turning technique
- Match the final abrasive grit to the finish and the use of the piece
- Importance of hand sanding with the lathe off

Finishing Environment

- Take a lesson from professional cabinet and auto body shops
- Dust, temperature and humidity are all factors in finish success
- Match finish open time and drying conditions to your finishing space
- Respect vapors, wear PPE and provide necessary ventilation
- Store finishes safely, respect the environment when disposing of old finish
- Buy smaller quantities and “turn” your finishes more frequently (6-12 months)
- A cardboard box, yogurt container and chopsticks can be important supplies

When Something Goes Wrong

- Take the time to diagnose the problem and learn from it
- Old Finish is the #1 culprit, followed closely by improperly stored finish, and a contaminated finish supply (from using straight from the can)
- Not mixing properly or following the manufactures directions
- Not respecting drying time and waiting for coats to fully cure (remember many finishes cure with oxygen and therefore cure from the surface down into the work, so dry to touch is not dry)
- Contaminants (bugs, dust, silicone and chemical) are the next group
- Environmental conditions (being outside the temperature and humidity range) are the next suspects

Additional Resources By Mark Palma

- Sanding
 - “Sanding and Scraping – The Taboos of Woodturning” Woodturning FUNdimentals, Volume 5, Issue 2
 - “Why Sand, How Sand” a comprehensive article on the entire sanding process, Woodturning FUNdimentals, Volume 7, Issue 4
 - “Better Power Sanding”, an article on power sanding and its role in the process, Woodturning Magazine, Issue 357, May 2021
 - “Premium Abrasives a Cut Above”, Woodturning FUNdimentals, Volume 11. Issue 1
- Overview on Finishing Process
 - “Creating a Sanding and Finishing Plan”, an article on how the sanding techniques and finishing plan was developed for a highly figured art piece, Woodturning FUNdimentals, Volume 7, Issue 4
 - “Why Finish, What Finish” an overview article on why we finish wood, and the options available, Woodturning FUNdimentals, Volume 8, Issue 1
 - “Plan for Success with Finishing”, an article on how to be more successful when finishing in a home workshop. Woodturning Magazine, Issue 331, May 2019
- Finishes
 - “Penetrating Oil Finishes” , Woodturning FUNdimentals, Volume 8, Issue 2
 - “Exploring 8 Surface Finishes” Woodturning FUNdimentals, Volume 8, Issue 3
 - “Shopmade Oil and Wax Finish” Woodturning FUNdimentals, Volume 9 Issue 1
 - “Finishing Hack-Oil Based Options” Woodturning FUNdimentals, Volume 9 Issue 1
 - “Shopmade Wipe on Poly Finish” Woodturning FUNdimentals, Volume 9, Issue 1
 - “Why Finishes Fail” Woodturning FUNdimentals, Volume 9, Issue 2
 - “Wax- A guide to using wax effectively” Woodturning Magazine, Issue 297, 2016
 - “Buffing Turned Work” an article about buffing wheels and compounds to enhance a finish, Woodturning Magazine, Issue 335, September 2019