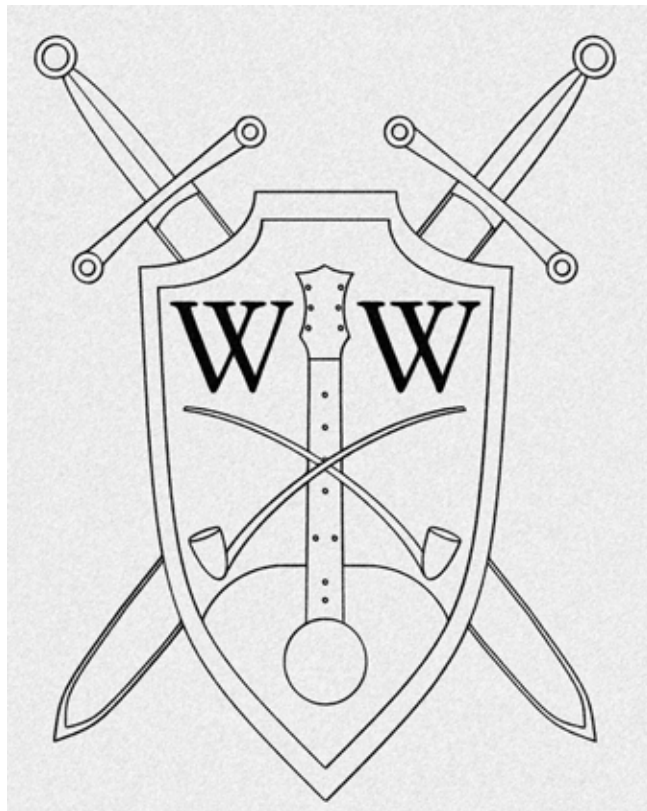


Westfarthing Woodworks

10 Step Guide To Wood Finishing



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Acoustic Guitar Making
How to Make Tools, Templates, and Jigs

Brian Forbes

Acoustic Guitar Making: How to Make Tools Templates and Jigs is a reference guide for many aspects of acoustic guitar making. The book covers making blanks, making tools instead of buying them, how small changes affect tone, and a thorough finishing section. This is a 508 page monster of a book, and it can be used as a reference for the guitar maker. This is not an ABC book, but a companion that teaches many of the things that the other step by step books leave out, or do not cover as thoroughly. For the beginning and the intermediate guitar maker, this book can be quite a resource. Click on the book cover and you can see more information and reviews on Amazon.



Wooden Rings
How To Make Wooden Rings By Hand

Brian Forbes

Wooden Rings: How to Make Wooden Rings by Hand is my second book, and it has step by step instructions and photo examples of over 50 rings that even those with limited woodworking experience can make. The instructions are written for basic tools which anyone can afford, though power tools can also be used if available. Everything from basic single species rings, complex laminations, and even wood/metal and inlaid rings are covered in an easy to follow, step by step manner. Wooden rings are very popular, and following this book they are very easy to make with only a few basic tools. Click on the book cover and you can see more information and reviews on Amazon.



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Introduction

Finishing is one of the topics that gives woodworkers the most frustration, and this is for several reasons. First, there are literally hundreds of different products to choose from, and dozens of different types. The application methods are numerous as well, which include spraying, brushing, cloth application, and french polishing. Also, finishing has a general mystique and mystery to the process that has worked its way into the minds of woodworkers and regular people alike. There is a feeling among woodworkers that it takes a long time to become good at finishing, and a lifetime to master it. Thankfully, this is not the case.

There are only a few things that have to be done in order to get a good looking and long lasting finish. Once these are known, it becomes very easy to apply the knowledge to other types of finishes, and the entire process loses all of its mystery. After reading this booklet, I hope you walk away with a firm understanding of finishing, and the confidence you need to start applying great finishes.

Disclaimer

This booklet is intended for informational purposes only, and if you choose to do or perform any of the activities listed within, you are doing so under your own free will and are responsible for any consequences. Woodworking and wood finishing have some dangers associated with them, and it is important to learn about and anticipate these dangers before participating in the activity. I make no assumptions about your abilities, and I recommend that all beginners do some research on safety precautions and protective equipment before trying out any aspect of woodworking or wood finishing.

Basic safety precautions include but are not limited to: Safety glasses to protect the eyes, ear protection for loud noises, a respirator to protect the lungs from harmful chemicals, proper clothing that is protective but not restricting or in danger of being caught in moving machine parts, and having a clean and organized workshop free of slipping and tripping hazards.

Safety in the shop is your responsibility and yours alone. If you think something is not safe, do not do it. If you require more education on a piece of equipment, seek it out and learn before you make a mistake that can cause an injury. Above all be careful and confident in what you are doing, and treat every tool with respect. I hope you have many long years enjoying woodworking as a hobby and even a profession. It is my belief that this can be a lifelong hobby as long as all safety precautions are taken, and awareness is maintained at all times while in the shop.

10 Step Guide To Great Finishing

Step 1 Choosing The Finish

The first step to successful wood finishing is to choose the right finish for the project. This simply means to select a finish product that will have the necessary properties for the item in question. For example, an instrument needs to have a protective yet flexible finish, because the piece will be handled quite a bit, and the wood needs to move and vibrate to create sound. A tool handle or a shop made clamp will need to have a finish that protects the piece well, but may not have many requirements besides that. Finally, a children's toy will need to have a food safe finish that will not harm the child when they inevitably put the item in their mouth. The use of the piece is really what determines the choice of finish, though many items can have the same finish and work perfectly well.

In order to understand what finish to choose, it is useful to understand what kinds of finishes are available, and how they work. To keep it simple, finishes can be broken down into a couple categories based on how they dry and cure. There are finishes that soak into the surface and there are finishes that form a film on top of the surface. All finishes fall into one of these categories, though some do a little bit of both.

Film finishes are those that dry on the surface of the wood without soaking in very much at all. These finishes tend to be tougher, longer lasting, quicker building, and in most cases can be buffed to a shine. Penetrating finishes are those that soak into the wood and cure just under the surface. These tend to have a flat or matte look to them, do not offer as much protection as film finishes, and often are derived from natural plant extracts.



Tru-Oil is polymerized linseed oil, which penetrates like an oil but builds on the surface like a varnish.



Arm-R-Seal is a wiping varnish, which is a varnish that has a high percentage of thinner so it can be applied by hand.



Tried And True makes several natural oil base finishes which can be applied by hand and look beautiful.



This Sapele Acoustic Guitar is finished with Tru-Oil, which is a polymerized linseed oil, applied with a cloth by hand.



This ring was finished with Carnauba Wax, which was buffed on the surface with a cloth wheel. This is a finish that tobacco pipe makers use.



This electric bass guitar was finished with a wiping varnish, which leaves a glossy sheen that's great for an instrument.

Another good method of choosing the right finish is to look at what similar items are finished with already by checking them online. Instruments for example are typically finished with only a few different products, though the reality is that almost any finish can be used. A kitchen table will be finished using certain products that are a little stronger than other finishes, because the table will have to withstand plates being dropped on it, glasses spilled, and things sliding on the surface. Knowing how these items are finished and what products are used is the first step to getting a great finish.

If the track record of a particular piece is not known, the information cannot be found, or the piece has just been invented and this is completely uncharted territory, consider the following factors when choosing a finishing product. Other than what the piece will be used for, which will give the most information, also consider how often the piece will be used. Tool handles and jigs will be used all the time, and they will need a finish that stays put easily, touches up easily, and does not interfere with the working properties of the piece. Also, consider the sheen that the finish will need to have. A piece that is designed to have a very glossy finish will do better with a film finish than a penetrating finish. Film finishes allow buffing and finishing of the actual finish layer in the end, where most penetrating finishes do not. If a matte or flat finish is desired, consider a penetrating finish or a low sheen film finish where special flattening agents have been added to reduce the gloss.

The truth of the matter is that almost any product can be used to finish almost any project. It is very rare that a finishing product looks bad on one project and great on another. As long as the surface was prepared well and the finish applied well, the piece will look great. The best advice is to purchase a few different finishes and keep them in the shop to test them out. Try a couple different products on the same board, separated by masking tape so they do not mix. Apply them according to the directions in this booklet or the directions on the product itself, and see what the results look like. At the end of the day, if the finish looks good, feels good, and makes the beauty of the wood show well, then it is a great finish to use.

Finally, the available equipment and the method of application need to be considered before making a finish choice. This will largely come from whether or not spray equipment is available in the shop. The ability to spray is nice to have, however most woodworkers do not have the space to create a spray area. For most people, finishing will be largely done by hand, which requires no special equipment, and is by far the most economical method of applying a finish.

To help the finish selection process, here are a few recommendations for finishes based on the pieces being made, and they should help in the beginning to make it easy to select a finish.

Furniture: Lacquer is the most common furniture finish, though many times it is because it can be sprayed on many pieces easily in the factory, making it the most cost effective for them. On large pieces of furniture, brushing lacquer, sprayed lacquer, shellac, and varnishes are the best to use.

Instruments: Depending on the instrument it can vary, though lacquers are typically used for guitars and varnishes for classical instruments like violins, stand up basses, and cellos. These can also be finished with a wiping varnish, oil finish, polymerized oil, or shellac.

Small Projects: Any small project like a box, ring, tool handle, or wood turning project can be finished with any finish available. The easiest to use are wipe on products like linseed oil, wiping varnish, Tru-Oil, and Danish Oil.



This pipe was finished with several coats of shellac, and then buffed with Carnau-ba Wax to a glossy shine.



Step 2

Surface Preparation

It has been said a thousand times, and it is still worth mentioning once more. The finish on a piece is only as good as the surface preparation. If the surface is uneven, lumpy, has sanding scratches, or has tool marks, the finish will not hide these things. In fact, the finish will amplify them to be even more glaring than they already are, and they will ruin the look of even a well applied finish.

Though it takes time and effort to prepare the surface for finishing, it is well worth the effort. The surface preparation does not require any finishing products, but it needs to be seen as part of the finishing process. Even though no actual finishing products are used in this phase, viewing the sanding and preparation as a integral part of finishing will help show its importance. Without a great surface, there cannot be a great finish.

To begin surface preparation, the piece needs to be very close to final shape, the closer the better. In the case of a wooden box for example, the piece should be fully built, any carving completed, and it should be fully functional. For a tool handle, the piece must be fully shaped, the mortise for the tool itself created, and any carving or rough work completed.

At this point, the surface needs to be looked at to determine where to start the sanding process. If there are many rough tool marks and deep gouges, it is a good idea to begin with a smoothing file or very aggressive sandpaper. The reason for this is to remove the surface imperfections as quickly as possible. If the surface is better looking, and simply has some light scratches, begin with 220 grit



Sanding a wooden ring with 120 grit paper to quickly break a sharp edge on the inside of the piece.



sandpaper to start the smoothing process. After each sanding process is complete, meaning the scratches and rough marks from the previous operations are removed, switch to a finer grit and repeat the process. Keep doing this until the surface has been sanded with 220 grit, and then do a very thorough check of the piece.

Rotate the piece slowly in a light to uncover any sanding scratches that are still visible, and go back with the last grit used to clean them up. Spend the time it takes to remove all the surface scratches, sanding with the grain where possible. Once all the scratches have been removed, it is time to evaluate the piece.

Most of the time, a finish can be applied directly to a surface that has been sanded to 220 grit, though on some woods the surface looks better when sanded to 320 grit or even 400 grit. The finish itself will have some texture to it when applied, so sanding any farther than 400 grit is counterproductive. In fact, leaving a little roughness on the surface (microscopic roughness left from sanding marks) does well at giving the finish something to hold onto. Most film finishes bond to the layer beneath using a chemical bond, mechanical bond, or both. If the surface has something to grip onto, the finish will bond both mechanically and chemically, making for a stronger and longer lasting surface in most cases.

A good sanding schedule will begin with the most coarse grit of sandpaper needed to efficiently remove the scratches that

are on the surface.

Try to evaluate this based on experience and the condition of the piece when the process begins. Start with that grit, then move to finer grits to keep making the surface smoother. A good progression is 80, 100, 150, 220, 320, 400, which will work great in almost all cases.



Sanding a ring with 220 grit to smooth out the area where the 120 grit was used, and finalize the surface.

Step 3

Filling The Grain

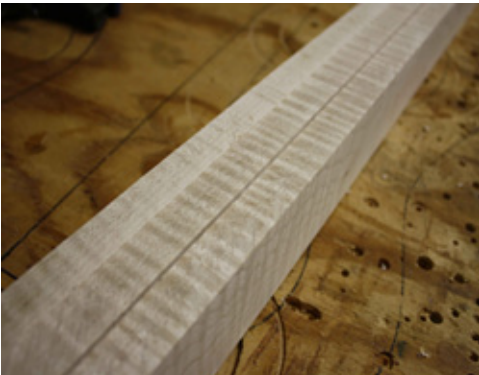
The grain type for pieces of wood can be categorized by whether or not they have visible pores on the surface, which places them into two categories. Open grained woods have easy to see pores or openings on the surface, which were used by the living tree to transport nutrients throughout the plant. Closed grain woods also have those same pores, however they are so small that they are invisible to the naked eye. Depending on the type of finish desired, a decision to fill or not to fill will have to be made.



Mahogany is an example of an open grain wood, because the pores are easily visible on the surface.

The first step is to take a look at the piece of wood being used on the project, and determine if the pores are visible or not. This is a very simple exercise, because if small holes are visible all over the piece it is an open grain wood, and if they are not, it is a closed grain wood. The second step is to decide based on the look of the final finish, whether or not to fill the grain if it is open.

To get a truly glossy and completely level finish, the wood needs to be closed grain, or the surface needs to be filled in order to level it out before applying the finish. A mirror shine and a heavy gloss without imperfections is not possible with open pores that cause dimples all over the surface. If this the case, there are a couple ways to fill the pores.



Maple is an example of a closed grain wood, because the pores are not seen by the naked eye.

The first is to use a dedicated product for the task, which is called a pore filler or grain filler. These are sold in a number of different variations, and the one used should be compatible with the final finish. Select an oil base for oil base finishes, and a water base for water base finishes. Follow the directions on the product, which is usually wiping it on across the grain, letting it dry, sanding the surface level, and then repeating if there are still open pores visible. The other method is to apply several coats of finish, let it cure, then sand the surface level, which in effect fills the pores.

If there are no pores to fill, or the natural look is more appealing, simply skip the pore filling step in surface preparation, and continue on.

Step 4

De-Wiskering

Depending on the type of finish being used, the wood sometimes has a tendency to swell up and expand when the wet finish is applied. This is caused by the moisture from the finish swelling up some of the wood fibers, causing them to pop out. When it happens, it instantly takes a nice level surface and makes it rough, negating all of the hard work done in the sanding process. Thankfully, it is an easy process to prepare the wood for this circumstance.

This kind of effect is more common with water base finishes than oil base, though it has happened to almost every woodworker before and with almost every finish imaginable. The best solution is to eliminate the problem right away, and raise the grain with water before going on to final finishing.

Find a clean white cloth, or purchase some very soft cotton from a fabric store. Undershirts work great for this process, just cut them into scraps, discarding the areas of the shirt that were around the neck and in the arm pits. These areas tend to have residual soil as well as odorant ingredients stuck to them, which should not be mixed with the wood or the finish. Dip the cloth in water and wring it out very well so that the cloth is wet, but not dripping. Wipe one surface of the wood at a time, allowing the rag to wet it, and then proceed until all surfaces have been touched. Re-wet the rag if necessary.

Allow the piece to dry for several minutes until the surface returns to the normal color, as the wetness will have dropped it a shade or two. Once the piece is dry, very lightly go over it with one grit finer than the last grit used on the piece to knock down the roughness. It is very important that only the rough nibs are knocked off, and that nothing more is removed. If the sanding goes too far, it will expose more fibers that can potentially pop out and defeat the entire purpose of raising the grain. Once the surface is even and smooth again, the de-wiskering is complete, and the finishing process can proceed to the next steps.



This guitar is completely unfinished, and the term “in the white” is used to refer to completed instruments that are awaiting a finish.



This body and neck are awaiting the de-wiskering process before they are finished.

Step 5

Thin Coats Win

When applying the actual finish, and it does not really matter which type, the best way to create a very smooth and fine looking finish is to apply thin coats. There are a few rare exceptions, like when working with Mirror Coat and pouring an epoxy slab, however for any standard finishing product, thin coats are best for a number of reasons.

First, thin coats dry faster, and they do not leave any residue on the surface. When a very thin coat is applied, it has a chance to rest on the surface and set up evenly, which means a more level and less lumpy and uneven look. Especially when hand applying oils or wiping varnishes, creating a very thin and even layer allows for the best looking surface after drying, and allows coats to be built upon one another more rapidly. It is the addition of several coats that creates a depth in the finish that sets off the piece, not laying down one really thick layer.

To do this with hand applied finishes, prepare the cloth by folding it over upon itself a few times to create a small bundle of fabric. Place the bundle over the mouth of the finish bottle, and tip it over to dispense a little finish. If using a can, lightly dip the center of the bundle into

the finish and allow some of the product to moisten it. Starting at one side of the piece, begin applying a thin and even coating to the entire surface. It is very important that the coating is done so evenly, and the color of the wood will be a good indicator of how this is going. The wood will darken as more and more finish is applied, and it will be lighter in the areas where little or no finish has been.



This guitar has one half of the top coated in an oil finish. Notice how the coloring really comes out after the oil is applied.



Pay attention to the coloring of the wood, and continue to spread finish to those areas that are lighter in color, while not adding more finish to the darker areas. Also, take a look from time to time at the surface in a glancing light, which will reveal the places where the finish is still too thick on the surface. These areas will have to be wiped over again to spread the finish and even up the surface.

Continue in this manner until one entire surface has been coated with finish, and then check it in a light again to ensure that there are no pools or heavy areas left behind. After this last check, the piece can be set aside to dry before the next layer is applied.

For brush applied finishes, dip the brush into the product barely enough to wet the tips of the bristles, and then spread the finish well on the surface. If the directions call for a single coating without going back over the surface, follow those instructions. Check and see if the finish can be applied with a cloth, and if it can, there will be far less fuss in the end when applied that way, because it is easier to maintain an even surface. Take the time and make sure the brush strokes are even, and that the amount being applied is even and thin. It will be far easier to go back later and add more finish than it will be to sand out a glob that was left by the brush.

With aerosol or spray finishes, take the time to apply very thin coatings to the entire piece, being sure to cover all surfaces. Aerosols tend to dispense a lot of product, so be careful that only enough to coat the surface is being applied. Once the entire piece has a coating, it can be left to dry before any additional coats.

Thin coats are the best when applying finishes, and they will make the surface look far better in the long run. Also, since the coats will dry faster, more can be applied, making the finish look deeper.



This is a close-up of a rosette and fretboard after several coats have been applied. The surfaces look great, and the finish shines.



Step 6

Drying Time

Depending on the manufacturer, though most are the same in this regard, the drying times on bottles and cans of finish are exaggerated somewhat. It

has been figured out through market research that people

will actually

buy one

finish over

another

because it

drys faster,

which is like

buying one

another be-

cup holders.

fundamental

car over

cause it has more

When thinking about the

things that make up a finish, the dry-

ing time should

be the least concerning aspect. However, since this hap-

pens to be the case, be wary of the drying times listed on

the products.

Most drying times are tested in controlled conditions, in ninety degree rooms with zero humidity and good air circulation. This causes the finish to dry faster, which means they can put a faster time on the bottle. The two main factors that influence drying time in this example are controlled, which are temperature and humidity.

In places where the temperature is cooler, and the humidity higher, finish will take a longer time to dry enough for another coat to be applied. Conversely, in places where the temperature is warmer and the humidity lower, the finish will dry faster. This is true for all finishes with the exception of some reactive finishes that cure through the combination of chemicals, and don't vary as much with temperature.

The best thing to do with any drying time listed on the product is to check the finish after the time has passed, and see how close to dry it really is. As a good rule, if the conditions are cold or humid, give closer to twice the



A Spruce and Padauk guitar hanging while the finish is drying between coats.

time listed. Though if the conditions are warmer and less humid, take a look at around 3/4 of the listed time. The first thing to do is look at the surface and see if it still looks wet or tacky. If it does not, very lightly touch the surface. If it passes these two tests, try touching a few other places and seeing if the surface is dry. Once it passes these tests, and the finish feels hard and dry, it is usually safe to coat a second time. Another small test is to smell the piece. If a strong solvent smell is still detected, then the finish will still need more time to dry. Perform these tests carefully, and if in doubt just wait a bit longer to ensure that the surface is dry before touching it.

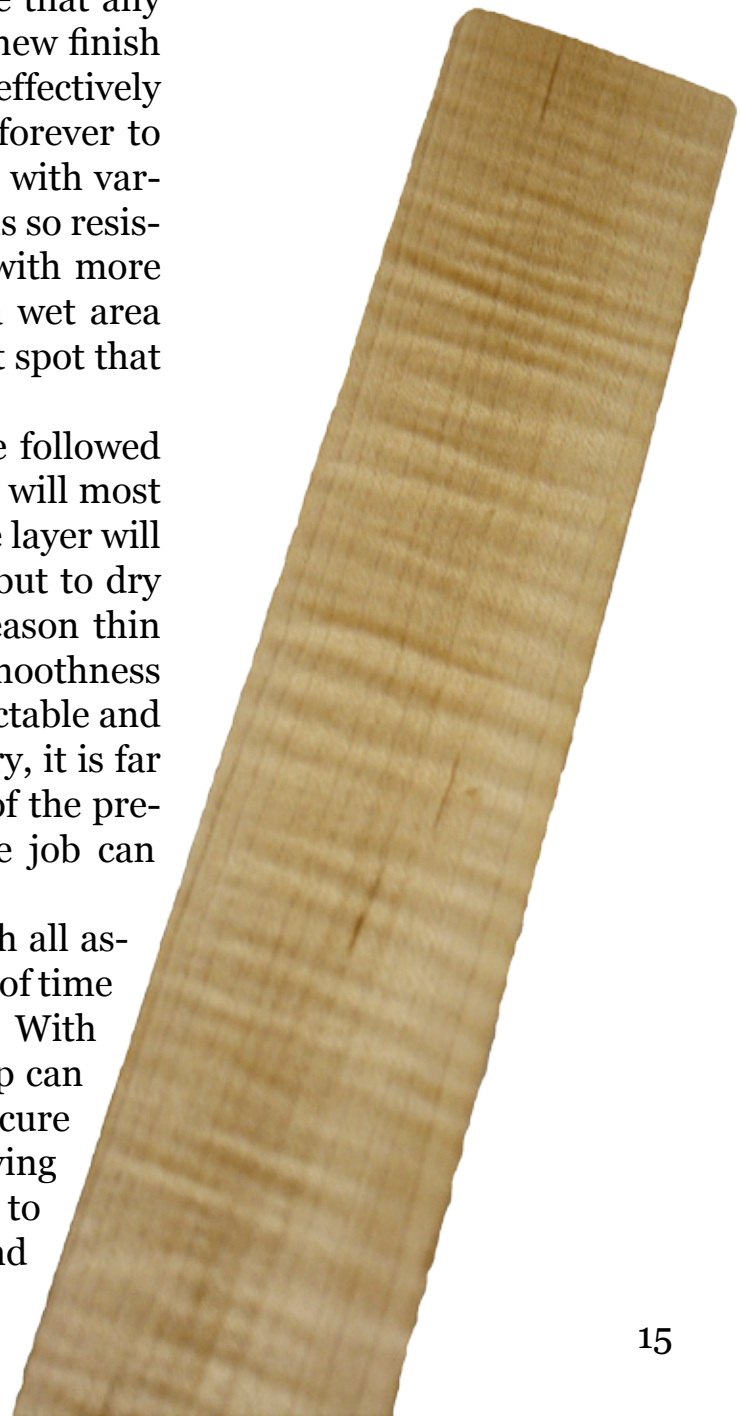
The reason that a finish coat needs to be completely dry before applying another layer is to be sure that any wetness is not trapped by the new layer. If a new finish layer is applied over one with wet areas, it can effectively seal in those areas, and they will either take forever to cure, or they may never cure. This is the case with varnishes more than anything, because the finish is so resistant to solvents that it even resists blending with more coats of varnish. It is very possible to trap a wet area under a new section of varnish, and have a soft spot that never really goes away.

If the directions in the previous step were followed while applying the coat, this is something that will most likely never have to be worried about, since the layer will be so thin that the finish will have no choice but to dry completely in the correct time frame. The reason thin coats work so well is really more from the smoothness that can be achieved, as well as the more predictable and decreased drying time. When a coat is fully dry, it is far more accepting to a second coat without any of the previously mentioned problems that rushing the job can cause.

The bottom line with drying time, and with all aspects of finishing is to allow the proper amount of time to pass before trying to rush to the next step. With drying time especially, rushing to the next step can cause a finish to take several weeks or more to cure fully, which wastes more time in the end. Giving the coats enough time to dry before going on to the second coat will mean better finishes, and better results.



A Spruce and Rosewood Acoustic guitar drying on a hanger.



Step 7

Sanding Coats



0000 Steel Wool in bundles from a local hardware store.

Sanding in between finish coats has become common knowledge among finishers, and it is almost as common of an idea as surface preparation before finishing. It is a good thing to sand between coats in many cases, though sometimes it is not necessary to do it between every single coat. In fact, spacing the sanding out can help build the finish faster, and the results will still be the same.

On most oil finishes that set up on the surface as film finishes, it is really only necessary to sand in between about every other coat, or every third coat. This is because the coats are laid on so thinly that they take a couple layers to really build up something worth spending time sanding. Also, the thin layers are easy to break through when sanding, and this can cause problems down the road with certain areas having less finish on them than others in the final product.

Varnishes do well with sanding between coats as well, and this is because of the solvent resistance that most varnishes and polyurethanes have built into their formulations. When the surface is sanded, the magnified finish becomes rough and uneven. This allows the next coat to flow into those areas, and form a mechanical bond between the two layers. This bond strengthens the finish by holding the layers together.

Most film finishes will partially reactivate the previous layer of finish when a new layer is applied. This effectively melts the layers into one solid layer, which is called chemical bonding. The solvent from the new layer of finish interacts with the dry solids in the previous layer, and they grip together through chemical means. If the layer is sanded before the new coat is applied, there will be a mechanical bond as well as a chemical bond, which makes the finish layer very strong.

For the vast majority of hand applied finishes, it is good to sand between every other coat or every third coat when applying layer after layer. Any more than this will be counterproductive in many cases, and the final finish will look no better or be any smoother.



A Mahogany board ready to be rubbed with steel wool.

The reason that coats are applied very thinly when finishing also strengthens this aspect of the overall process. A very thin layer will have less high areas and low areas, since there were no globs of finish or deep pools left on the surface. The layer itself will be very smooth, and the only imperfections will be from floating lint that lands on the surface while it dries, or sometimes lint from the cloth itself.

After a few very thin coats, use 0000 steel wool, and very lightly go over the finished surface once the last layer completely dries. It is very important to wait for the layer to be dry, because abrading the surface can move finish that is still wet or soft, and this will cause damage to the smooth film. Using the steel wool, go over the surface with the goal of smoothing out any areas that feel rough to the touch. Go over any smooth areas as well very lightly, though focus the energy on blending the rougher places into the smoother areas, creating one uniform smoothness to the entire piece.

Steel wool comes in several grades, and they are based on the coarseness of the product. They are labeled with o's on the packaging, and the more of them there are, the finer the steel wool. 0000 steel wool is the finest commonly available abrasive, and it is a very fine cutting, almost polishing abrasive. With steel wool, the tendency to sand too deep and cut through the finish layer down to the bare wood is greatly reduced, simply because the wool only cuts so fast. It takes quite a while and a large amount of elbow grease to get through a finish with steel wool versus sandpaper, which depending on the grit can cut very quickly.

Most steel wool grades can be found in any hardware store near the painting supplies. This is the same as any other steel wool, though this is different than SOS pads for cleaning dishes. These have soap inside the wool, which is not good for using on a finish at all. Nicer grades and higher quality steel wool can be found in fine woodworking stores, and they sell it in a different package and quality usually. In woodworking stores, the steel wool is sold in rolls, where a small section is cut from the roll and used, and then it is discarded. Steel wool should be used with the product flat on the palm of the hand, which distributes the abrasive forces over a wider area.



Arm-R-Seal finished board after 0000 steel wool.



Close up of 0000 steel wool.

Step 8

Residue Removal

After the finish has been abraded with steel wool, it is important to remove the residue that the process creates before applying another coat of finish. This is for a couple reasons. First, the residue is going to be mixed into the next coat if it is not taken off before the new wet layer of finish is applied. Also, the wipe down of the piece allows one last check to see if there were any areas that were not made smooth before going on to the next coat.



Any white cotton cloth can be used with Naphtha to remove steel wool residue.

The primary purpose of removing the steel wool residue is to keep it from getting stuck in the next layer of finish. This would be completely counterproductive to the purpose of using the steel wool in the first place, which was to make a smoother finish. There are a couple ways to remove the residue, and depending on what is available in the shop, the choice should be fairly easy.

One of the easiest methods is to use an air line with an air gun attachment, which releases a continuous blast of air that can be directed at the piece. This works well for larger items like instruments, and items that have many hidden areas or hard to reach areas like handmade jewelry boxes. The process simply involves pointing the air nozzle towards the piece, and blasting it with a steady stream of air, removing all the fine residue off of the surface.



The cloth will change color as residue is picked up from the surface of the piece.

Another method is to use a tack cloth, which is a pre-made piece of linen that has been soaked in a varnish and dried until it has become tacky and sticky. This is used much like any other cloth, and the surface is wiped all over. The fine particles stick to the cloth, and they are carried off the surface.

Lastly, a clean rag with a little Naphtha on it can also effectively pick up dust as well as steel wool particles, and be reusable over and over. Simply dampen the rag with Naphtha and wipe over the surface until all the residue is gone and the surface is lint free. Naphtha evaporates very quickly, and is used as a solvent over existing finishes like this because it does not have enough time to break down the surface, or reanimate the finish layer.

Step 9

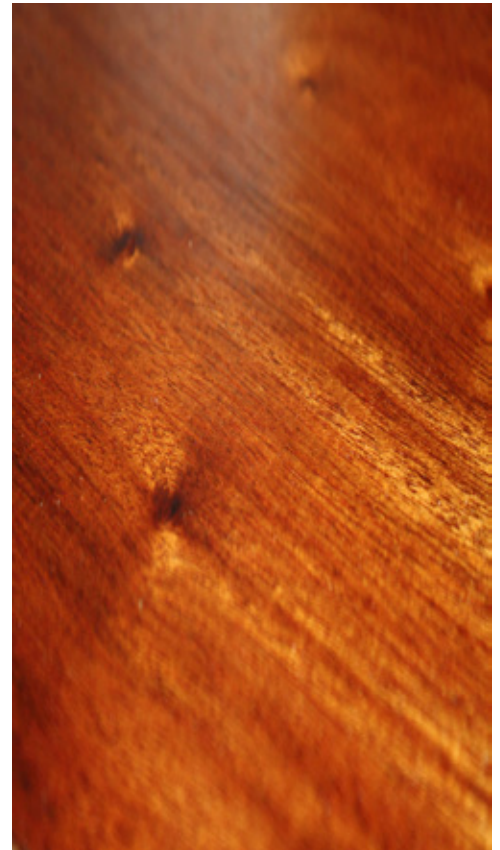
Curing The Finish

After all the laborious and time consuming work of finishing is complete, the final step is to sit back, relax, and allow the finish to fully cure before using or handling the piece. This can be very tough for many woodworkers, because we are all like kids and we want to play with the new toy we just created as quickly as possible. It is well worth the wait to allow the finish to fully cure however before handling, because it is in the final stages where the finish really hardens.

Drying and curing are two very different things when it comes to finishes. A finish that is dry will look almost the same as a finish that has cured. It will even feel the same, and sometimes it will even smell the same. The difference is that the cured finish is as hard, durable, water resistant, and solvent resistant as it will ever be, and the dry finish is not. A dry layer will become wet and gummy again very quickly if exposed to water or solvents, and this can be a problem if the finished item is an instrument or a dinner table. It makes the impatient woodworker look bad when a beautiful finish starts falling apart because it was not fully cured before giving away the piece.

A good rule for most finishes is to double the curing time listed on the bottle, or wait for two weeks and allow the finish to oxidize. Curing is really the evaporation of solvents from the finish, which are the part of the mixture that keeps everything wet. Finishes are solid, which means they need a solvent to make them a liquid, so they can be spread onto the piece. Once the solvents evaporate, they leave behind all solids, which are now conveniently covering every surface of the piece.

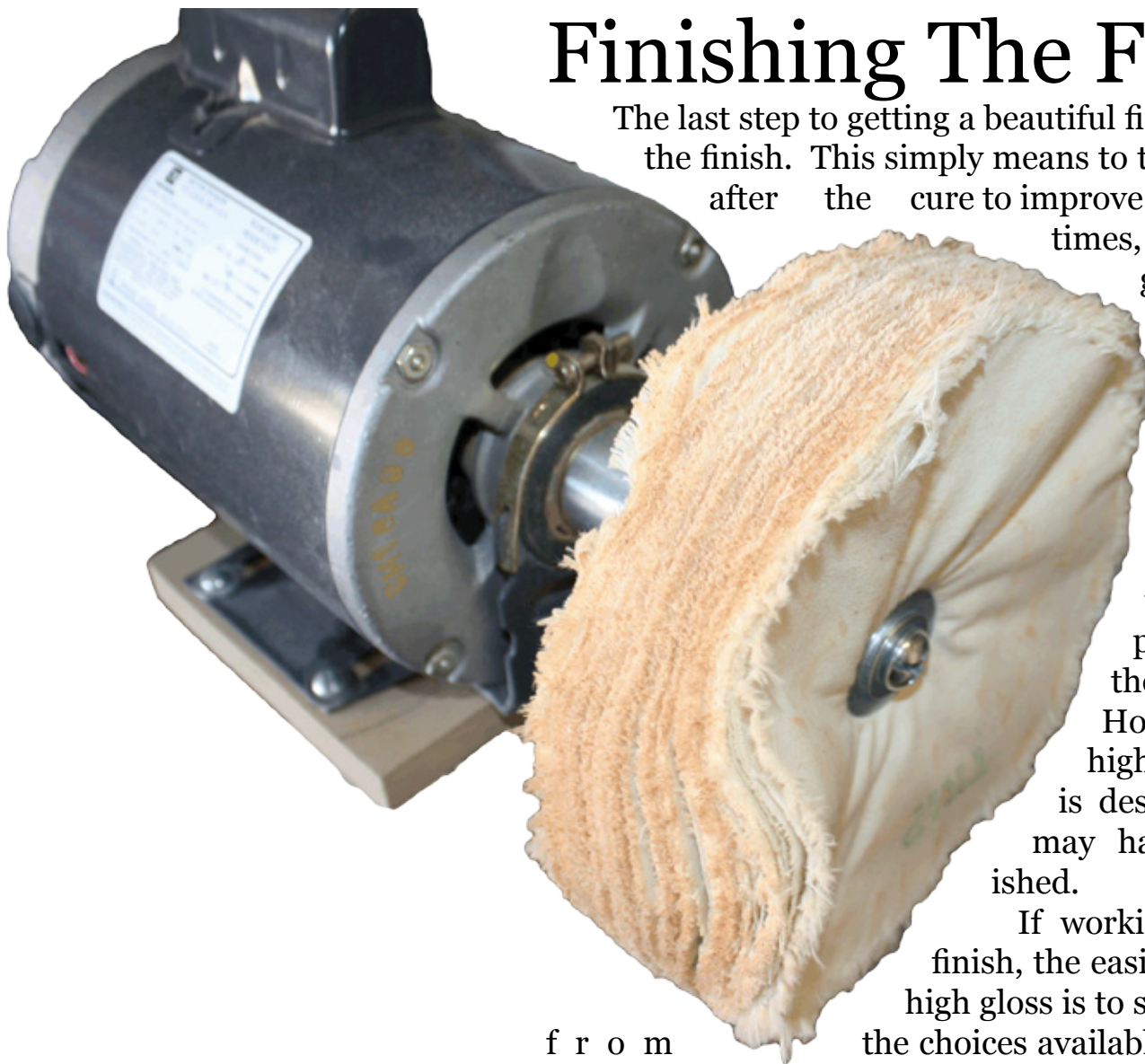
The final test for any cured finish is to smell the surface and see if any solvent odor is detected. A dry finish will have a very slight solvent smell, while a fully cured finish will have no solvent smell at all. This is very important. If the solvent smell can be detected, the piece has not fully cured, because solvents are still evaporating from the film. If this is the case, the piece will require more time to cure before handling.



A finished board, after the residue has been removed and several coats of finish have been applied.

Step 10

Finishing The Finish



The last step to getting a beautiful finish, is to finish the finish. This simply means to treat the surface after the cure to improve the look. Many

times, unless a very glossy surface is required, there is really nothing to do except wipe down the surface with a clean cotton cloth, and proudly display the finished piece. However, if a very high gloss finish is desired, the finish may have to be polished.

If working with a film finish, the easiest way to get a high gloss is to select that sheen from the choices available at the time of purchase. Most varnishes, lacquers, and other

coatings are sold in several sheens, and this is the best way to get that certain look without all the extra work. However, if the finish was a polymerized oil, linseed oil, Danish Oil, Tung Oil, or Shellac, it will have to be polished to bring out the gloss.

On treated oils and shellacs that are meant to form a film on the surface, this treatment can create a very glossy, and almost wet looking surface. The finish all by itself may look fairly glossy as it currently stands, but it can take on a much glossier sheen if polished.

Several companies sell rubbing compounds that are applied to a rag and wiped on the surface in small swirl patterns, much like waxing a car. In fact, McGuire's Swirl



This is a store bought buffing wheel with a basic mandrel that can be held in any chuck.

Remover is a product for cars that really works well on film finishes. The company makes a few levels of scratch removal, and on a dull finish it will be best to start with one step before the final shine polish, which makes refining the surface much easier because it cuts the finish a bit more. This process takes quite some time even for an experienced hand finisher though, and it can be a little messy the first few rounds. An easier, although slightly more expensive method is to buff the finish with a dedicated finish buffing setup.

The Beall Tool Company makes a fantastic wood buffing product called the Beall Buffing System, and this is sold online and in several woodworking retailers. It is a system of buffing wheels and compounds that are used in order, and they create an almost wet look to the finish that has to be seen to be appreciated. The buffing wheels are essentially holders for the compound, which does the actual work of microscopically polishing the surface until all the fine scratches are completely gone. This is what creates the sheen.

There are also other buffs that are sold with mandrels that can be held with a chuck. These can be used in a drill press or lathe, and are more economical than buying a small motor to turn the buffs. Look for these at a hardware store, as most of them carry at least a couple buffs and mandrels. The compounds used should come from a fine woodworking store, and the easiest two step process is to use Red Tripoli and White Diamond Compound in that order. Carnauba Wax can then be used in the end as an optional step, to add a glossy wax layer.



This is a lathe mounted buffing wheel that is held in place with a chuck.



Tips, and Tricks

Finishing can be a frustrating process for beginning woodworkers, but if the right finishes are chosen, and the right methods are used to apply it, this can be one of the easiest aspects of the craft. The process of finishing is just like any other woodworking skill, it must be practiced until the results are predictable and consistent.

One of the best things to do as a beginning or intermediate finisher is to focus on a few pet finishes that are versatile, great looking, and also easy to apply. Most hand finishes fall into this category, with the one notable exception of French Polishing, which can take some time to master. For most items, choosing between an oil, varnish, shellac, or lacquer is quite enough variety that a good looking and well functioning finish can be applied.

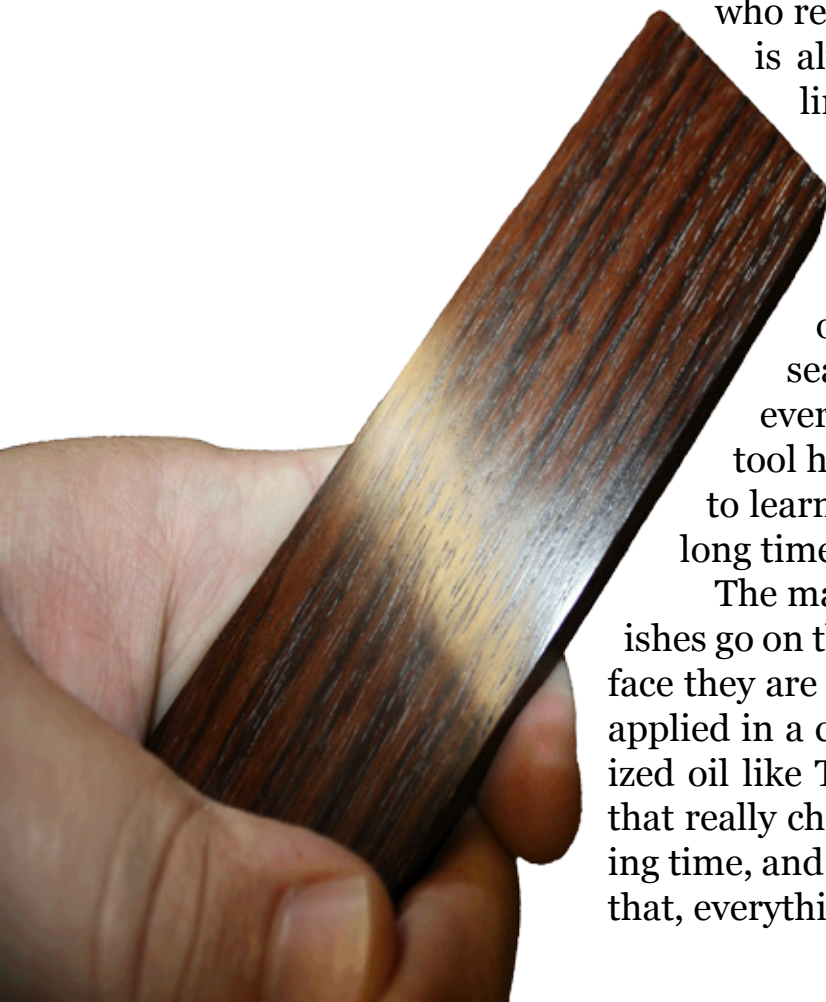
The real beauty in finishing is that the depth of knowledge is vast, however the amount required to apply a particular finish is relatively low. This means a new finisher can select a couple wipe on finishes, get really good at them fairly quickly, and be able to finish almost anything they make in a professional manner. For those

who really want to get deep into the subject, there is always something new to try. The old violin varnishes for example, are a subject that classical instrument makers study relentlessly in an effort to recreate what the old masters used on their instruments. For someone who is interested in this aspect of finishing, there is a lifetime of study, research, and discovery awaiting them. However, for someone who simply wants to finish a tool handle or an instrument, there are very easy to learn finishes that will work very well and last a long time.

The main point of this discussion is that most finishes go on the same way, react the same way to the surface they are applied to, and behave the same way when applied in a consistent manner. Going from a polymerized oil like Tru-Oil to a wiping varnish, the only thing that really changes in the application process is the drying time, and the can the finish comes out of. Other than that, everything else is largely the same.



This is easily my favorite finish. Tru-Oil is easy to use, easy to repair, and looks great at any sheen. It is a polymerized oil, and a little goes a very long way.



Good surface preparation will always be one of the big secrets to a great finish. As long as the surface is smooth, free of tool marks and imperfections, and free of dust, the finish will look great. A poor surface only becomes worse when a finish is applied, because the added gloss magnifies the light reflection, and any differences are highlighted immediately. Spend the time it takes to get the surface perfect, and the finish will not suffer because of the condition of the wood. In reality, it only takes a few more minutes or a small percentage of the total build time to remove every last imperfection and scratch. Spend this extra time and the piece will look great for the rest of its usable life. This is a small time exchange for a lifetime of perfection, and a good trade.

The other big secret to finishing is to apply very thin coats exclusively, and resist the urge to lay on a thick coat in an effort to speed up the process. In the end, thicker coats take longer to dry, sometimes they stay soft for weeks if coated over too quickly, and only make the process take longer. Apply thin coats only, and wipe off any residue with the same cloth used to apply it. These coats will lay flatter, dry faster, and build better because they are given a better chance of success.

Lastly, don't rush at the end. Finishing tends to be rushed through, making most people think it is difficult to do, and they readily spread this information around because it couldn't have been their methods that yielded the poor results. Take the time needed in the end to prepare the surface well, apply thin coats, steel wool every couple to few coats, and wait for the full cure. All of these seemingly small things have a huge impact on the look, and are well worth the time it takes. Have patience, and good results will follow.

Hopefully this has you on the way to becoming an excellent finisher. Follow the steps, and be sure to invest the time that it takes to create an excellent looking finish. Practice on a couple flat pieces of wood, and after a couple are completely finished, this process will become very easy, and enjoyable.





About The Author

My name is Brian Forbes, and I have been a woodworker and instrument maker for over fifteen years. My small shop is in Arizona, and I enjoy making acoustic and electric guitars, tobacco pipes, wooden rings, and many other projects. I have published two books on woodworking, one on making acoustic guitars, and the other on making wooden rings. Both of these books are filled with great information, and I encourage you to take a look for them on Amazon.

In addition to my personal projects, my formal education comes from the furniture repair, refinishing, and restoration field, where I have taught the craft to several people during my time as instructor. Many of these craftsmen have gone on to have very successful careers in furniture repair. My love of teaching people about woodworking and finishing led me to publish my books, as well as the encouragement and positive words from those who I help on a daily basis with woodworking questions via e-mail. If you ever have a question that you can't find an answer to, please feel free to e-mail me, and I will do my very best to help. My e-mail is westfarthingwoodworks@gmail.com

Useful Information

My web site is www.westfarthingwoodworks.com

My books can be found on Amazon by clicking on the pictures on page 2, they cover acoustic guitar making and wooden ring making.

One of the best places to purchase fine woodworking tools and materials is Woodcraft, and their web site is www.woodcraft.com

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Thank you very much. I hope you enjoy reading this booklet as much as I have enjoyed writing it.