

Guitar Finishing Using Wiping Varnish

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Introduction

Wiping varnish offers many advantages as a film finish for stringed instruments. It provides a strong, thin surface finish with a pleasing satin texture, currently in vogue. It is generally about as durable as lacquer of the same thickness. Wiping varnish is easy to use, and can be applied without any special equipment or precautions. You'll get an excellent finish on the first attempt. In our experience the time needed to completely finish an instrument with wiping varnish is about the same as is required to do so using lacquer in a small shop setting. In this article we outline our combined experience using wiping varnish in the finishing of musical instruments, and provide a finishing schedule which works well for us.



What is Wiping Varnish?

Simply put, wiping varnish is oil varnish which has been diluted enough to be applied with a rag. It is easy enough to make your own. In his book [Hand-Applied Finishes](#), Jeff Jewitt describes it as varnish thinned to the consistency of whole milk, which ends up being something like a 1:2 to 1:3 varnish-to-thinner ratio. When in doubt it is probably better to err on the side of a thinner mix. Because it is tough, and since we don't attempt to rub out our finish (the coats are simply too thin), we like to use readily available general purpose interior satin polyurethane varnish mixed with odorless paint thinner. You could also use a gloss product, but expect to put a bit more effort into buffing down the final coats to attain a satin finish. Varnish tends to thicken and skin over when exposed to air, so it is a good idea to mix wiping varnish in small batches, store it in airtight containers, and use it up quickly. It takes about a cup of wiping varnish to finish a typical guitar according to our schedule.

You can buy wiping varnish ready made, but you'd be hard pressed to find any product with that name. Most wiping varnish sold commercially is marketed as some sort of "oil" finish, although it is both stretching the truth and needlessly confusing matters to call these products "oil." About the only way you can tell if a so-called "oil" product is really wiping varnish is to use the "can top" test as recommended by

Bob Flexner in his book **Understanding Wood Finishing**: let a little of the stuff cure overnight on the top of the can it comes in. If it cures hard, it is varnish. For more on wiping varnish masquerading as oil, see Flexner's book. While some products labeled as “oil finishes” are wiping varnishes, there are pure oils available as well-typically pure tung oil or linseed oil. These are not the same type of finish as wiping varnishes, they take a long time to cure (if they cure at all) and offer very little protection. Luckily most pure oils announce “PURE” on the can, loud and proud. There are so many finishing products out there (and the label descriptions are mediocre at best) that it is worth your while to learn more about the different finish types. Flexner provides an excellent treatise on the subject.

One packaged wiping varnish we are familiar with is **Formby's Low Gloss Tung Oil Finish**. It works well, has a relatively long pot life (i.e., it takes a while for it to dry), and is widely available in paint and hardware stores. If we had to guess (and in fact we do have to guess- our email query asking the manufacturer for info on the ingredients was never answered) we'd say this wiping varnish is made with a “long oil” polyurethane varnish diluted with a not-too-volatile solvent. We use it and have had good results with it. **Minwax** makes a good wiping varnish as well; it's called **Minwax Tung Oil Finish**.

Finishing Schedule

This is the finishing schedule we use with **Formby's**, **Minwax**, or with wiping varnish we mix ourselves. Due to the mystery surrounding the actual ingredients of a lot of the commercial products we can't say this will work for all products, but we have used it successfully for the specified varnishes. It will probably work for most other packaged wiping varnishes (with perhaps some slight variation in technique, drying time, etc.).

1. Prepare for Finishing

Sand to 220 grit and follow with #0000 steel wool to remove dust from pores. Some woods, figured maple in particular, respond very well to sanding to a finer finish. The figure really pops if you work your way up through 320 grit. Pay extra attention to the end grain in figured woods. If the end grain is not perfectly smooth to the touch it will grab at your finishing rag and get lint in the finish. You may want to be a little more particular about the surface condition than you might be if finishing with clear lacquer- the wiping varnish finish is very thin and will not fill small hollows the way a thick lacquer finish might. Vacuum or blow away dust. Wipe oily wood (like rosewood) with lacquer thinner until you cannot see any more color on the rag. This will remove surface oils that adversely effect adhesion. There is no need to mask the fingerboard, and in fact doing so may result in the buildup of a “witness line” of varnish at the edge.

The wood can be colored with a direct application of water or alcohol based dye stain. If you choose to dye or stain the wood be very careful to make sure that the wood is perfectly sanded! Any scratches, tiny areas of tearout, or other surface imperfections will jump right out at you once you apply the stain. If you do miss a scratch and find it during staining, fear not; sand away the affected area and reapply the stain as needed. Be careful not to create lap marks around the perimeter of the touched-up area. Water based dye will raise the grain. If you use it, dye, lightly resand with 320 to get the surface smooth again, and then reapply the dye.

If desired, pores in wood can be filled with any paste grain filler that uses varnish as a binder, that is, any filler that can be thinned with mineral spirits. Follow the instructions that come with the filler with respect to application and removal.

Once you have the surface fully prepared wipe on a quick coat of finish as described below. Take the mindset that this first coat is a throwaway. This initial coat will allow you to see the sanding scratches that you missed, despite the fact that you were so very meticulous! Sand out the scratches to 220 or 320 and then move on to the application of the build coats.

2. Apply Build Coats



We generally apply 10 to 12 coats as follows. The number of coats will vary depending upon the species of wood you are finishing as well as whether your can of finish is fresh (thin) or not. Some oily woods, such as pau ferro or true rosewoods, seem to respond well to fewer coats. As a rule of thumb it is a good idea to apply as many coats as it takes to completely fill the end grain (like on the top of the headstock) followed by a couple more coats.

Varnish is a magnet for dust and takes a while to dry, so try to keep the area you are working in as dust free as possible. Do your finishing in a room that is separate from your woodworking shop if at all possible. Before each coat blow dust off the instrument with compressed air, then go over all surfaces lightly with a tack rag. We take a decidedly Zen-like approach to dust. Do everything possible to avoid getting it in the varnish, but if some does get in (and it will) don't fret over it, embrace it (but please wait until the instrument is dry before doing so). Dust is part of the character of any varnish finish. That said,

let us add that buffing between coats with #0000 steel wool as we describe will eliminate most, if not all of the dust.

Prepare an application rag from well washed, lint free white cotton (old T-shirt material works well), about 8" square. Fold the rag so all of the ripped edges are in the center, to keep lint out of the finish. Ball up the rag enough so that the wiping varnish is not absorbed to the point where it gets all over your hand. You should end up with a flat, smooth applicator surface of about 3" square. Wiping varnish doesn't feel particularly nice when it's on your skin for any length of time, and it tends to destroy rubber gloves rather quickly (it makes them toughen and crack). No doubt there are health issues associated with long term skin exposure. We use disposable vinyl gloves or simply avoid getting it on our hands.

Put some varnish on the rag and apply a thin even coat to the instrument, refreshing the rag as necessary. Try to keep it off the fingerboard, but don't worry too much if some slops on- it is easily removed later. As with the application of any finishing material, coats should be neither too thick nor too thin. Fortunately it is very easy to detect either case with wiping varnish. Since the material is so thin, any attempt to apply it too thickly will immediately result in puddles and runs. These are both easy to avoid and, if they do happen, easy to mop up. The material should flow smoothly off the rag. If the rag starts to bind or drag, or you have to press down on it to get the varnish out of it then the coat is coming out too thin and it is time to recharge the rag. It takes little practice before you get the feel for the right amount. Look at the area you are wiping from an angle so that you can see light reflecting off the surface. If your rag is not wet enough you'll see that there are dry lines in your coat. If you have too much varnish the coat will look thick and sloppy. This technique is easy- after your first coat you'll have it down pat.

Try not to "worry" the material too much, just apply it with as little manipulation as possible, particularly on the first few coats. Try to make a single wipe that gives you full coverage, and then don't wipe that area again if you can help it. Overlap it a little with the next wipe of the rag. This will give you the smoothest, most lint free finish. Note that this advice is contrary to the instructions found on many brands of packaged wiping varnish. Although there is little to be concerned about in the way of bubbles or marks from the rag, working the material too much will simply pull lint out of the rag as it goes over the rough end grain. Again this is only an issue on the first few coats, before the end grain is sealed. Some brands of wiping varnish instruct you to put on a wet coat and then rub it off after a few minutes. We don't do it that way, as this won't allow the finish to build to give the protection a musical instrument requires.

You can apply the entire coat while the instrument is hanging from a hook, but it is nice to be able to move it around relative to the light to be sure the coat is going on smooth. Here is a basic handling sequence which works well when applying a coat; this is how we do it, but you will find the way that works best for you:

- Wearing a cotton glove, hold the instrument in the middle of the neck and coat the back, front, and sides of the headstock and down the neck a few frets;
- Supporting the instrument in your lap as needed, do any inside corners, like the fingerboard-to-top joint;
- Supporting the instrument in your lap, do the back;
- Holding the instrument in the middle of the neck again, do the sides and the neck heel, and up the neck a few frets. You can still do this while seated and support the middle of the neck over one leg while you're holding it;
- Still holding the instrument in the middle of the neck, do the top;
- Hang the instrument up and do the place on the neck where you were holding it;

You can wipe any lint or big specks of dust out of the wet varnish as they appear, but don't sweat the small stuff. Since the coats are so thin you can easily remove most nibs after the coat dries, using steel wool as described below. If the varnish starts to dry before you are done with a coat, thin it a little more and rework the coat. There should be no signs of drying until well after you have applied a coat. The judicious addition of a very small amount of low volatility thinner (like kerosene) to the mix will slow drying time. Note that drying too quickly is rarely an issue with commercial packaged wiping varnish. Watch the viscosity of the varnish, particularly as you get near the bottom of the can. If it gets too thick it may dry too quickly or leave bubbles and marks from the rag. As it thickens it also imbues a more amber cast to the finish and does not highlight the grain as effectively (it tends to sit more on the surface). We rarely actually finish up a can of packaged wiping varnish before it has to be thrown out.

Allow the instrument to dry overnight, although with some varnishes drying time may be longer, particularly if it is cold and/or damp, or if the coat is a little thick. You can apply a little heat from a regular lamp to speed drying. A little (very little) Japan drier added to the mix can speed drying too, but don't try to speed it up too much.

When dry, prepare the instrument for the next coat by buffing it with the grain with #0000 steel wool. If you have stained the wood you may want to use a very light touch or skip this entirely on the first few coats as it is very easy to go through the finish (unless you're looking for a worn or distressed looking finish with the dye worn away from the edges, but that's a different story). For later coats or all coats on unstained wood, buff lightly with the steel wool until the surface is uniformly satin in appearance. If you've got some big boogers or runs in the finish you can carefully cut them out with a razor blade or very sharp chisel. If you have a lot of dust in the finish you will need to buff more vigorously with the steel wool to get

everything smooth again. At this point you'll be saying, "That's why they specified lint free rags!" No rags are lint free, of course, but tee shirts are better than terry cloth.

Scrub any varnish that got on the fingerboard with steel wool to completely remove it. Vacuum up the steel wool dust. Be thorough! Get all the dust out of the pickup cavities, control cavity, mounting holes, etc., or you will be buffing these nasty bits out of the next coat.

3. Apply Final Coat

After a careful steel wooling following the last build coat, eyeball the surface in a raking light to check for any major blemishes or places where the top coat has been cut through during steel wooling. Unlike with thick brushing varnish, the coats of wiping varnish are very thin and do not leave a white witness line if you cut through. Cut-throughs look more like a light water stain than anything else, if they are visible at all. Make sure that all surfaces are evenly buffed so that there are no glossy areas. If there are any of these blemishes plan on doing another build coat before the final coat.

We use a special polishing coat for the final coat, to fill in the steel wool scratches and leave a uniform satin sheen. Working with one surface of the instrument at a time (i.e., top, sides, back, neck) apply a thin coat of wiping varnish. Immediately buff it off using a circular stroke with a cotton terry cloth pad, starting with light pressure and then getting lighter and lighter until you're barely touching the surface. If swirl marks appear and don't seem to yield to buffing out, thin the varnish a little more and try again. Lint isn't much of a concern here since you will buff this coat till it is nearly dry. Still, avoid touching this coat; fingerprints aren't that appealing as guitar decorations.

Allow the instrument to dry overnight and check it again for finish flaws. If all is well apply a coat of paste wax. One important note. Some paste waxes contain thinners that will dissolve the varnish if it is not fully cured! One wax that is always safe to use is **Butcher's Bowling Alley Wax**. Again working with one surface at a time wipe the wax on and then immediately buff it off. That's contrary to the directions on the can, once again. It seems we have a difficult time following instructions!

Maintenance and Repair

Unlike lacquer which is a coalescing finish, varnish goes on in discrete layers, so any major repair to the finish must be topped off by an additional coat of varnish to the entire instrument. Fortunately this is very easy to do with wiping varnish. Follow general spot repair techniques for varnish finishes (the referenced books both contain a wealth of repair information) and then cover the entire instrument with one or two build coats, a finish coat, and paste wax. If the repair area is small enough you can just do a discreet spot repair and it won't be very noticeable. Build up coats on the repair area and buff lightly- you don't want to remove finish from the surrounding (undamaged) area. Top with wax.

Conclusion

Wiping varnish offers a good alternative to more common finishes for stringed musical instruments, and is worth checking out if you are interested in a thin, satin, easy-to-apply finish. With no more investment than a can of varnish you can prepare some sample boards and try the process for yourself. If you like the results, try it on an instrument.