

## “CA finishing of bowls and vessels”

CA finishing of vessels and other forms can be durable, quick, and with a little practice, an easy finish to apply.

I began using this finish on my smaller turnings several years ago. Since then, I have started using it on larger pieces as well. I wanted a gloss finish I could apply on the lathe without any spray equipment, which had the durability of a catalyzed spray finish. Spraying small pieces is wasteful of time and material.

Pen turners gave me this idea...I had a pen that was about 8 years old with a CA finish that held up better than its plating. So I knew durability was excellent, but was told by several people that the application was an issue and that it couldn't be done on pieces as large as I wanted to do.

I took this as a challenge and began experimenting with the application. The following steps are the techniques I have used to successfully apply a CA finish:

### Archival Considerations and Concerns

CA has had some archival concerns when used as an adhesive for joints. I never use CA for a permanent joint. CA is very hard when cured and the expansion and contraction of the wood with humidity changes can deteriorate the joint. However my concerns of the archival qualities as a finish are much less. Most hard or gloss finishes will deteriorate over time. Lacquers, catalyzed varnishes, shellac, and polyurethanes all deteriorate over time. I have noticed no deterioration on my older CA finished pieces. I feel the key for a long-lasting archival quality CA finish is the entire piece must be finished or sealed both inside and out. If the interior can be accessed it is always best to use CA for the interior finish. If not accessible, a gel polyurethane, or water based polyurethane will do; both work well in areas that have limited access. I always finish the interior of the piece before proceed to the exterior of the piece. The key is having the entire piece sealed. A fully sealed piece prevents the expansion and contraction caused by changes in humidity. Also, limiting exposure to extreme temperature changes is also important. In other words, I would not suggest CA as a finish for a piece that would be outdoors.

### Safety Considerations

As with all our woodturning endeavors, safety must be the first and foremost consideration. Proper eye and face protection is very important, as is proper ventilation. CA, while not deadly, is an irritant that can burn your respiratory tract. Fanning the fumes away from your face and/or an organic respirator should be employed.

### Material List:

5CPS (thin) viscosity CA for the finish  
Medium, thick CA or epoxy for filling pinholes or voids

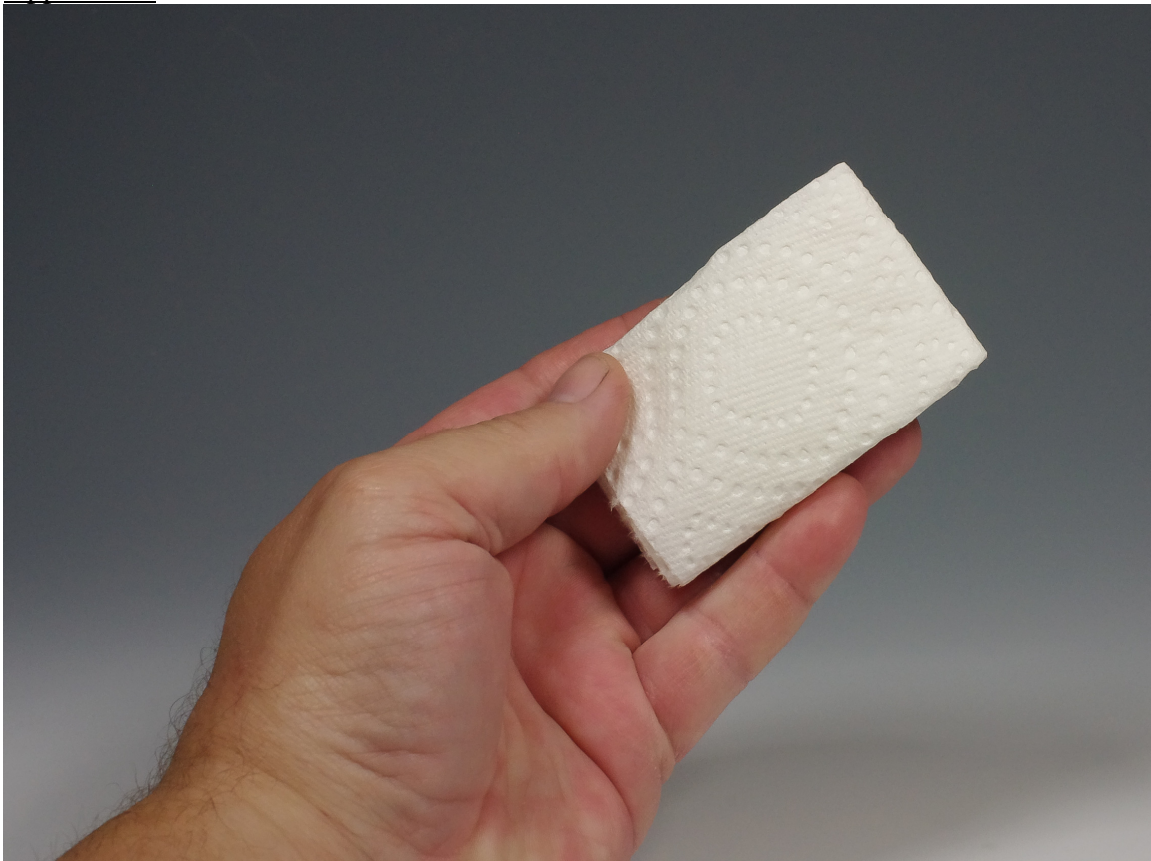
CA accelerator. I prefer the accelerator that uses **acetone** as the carrier for the amine.  
Sand Paper, 320-2000 grit as a minimum.  
White, or alternative mineral spirits.  
Paper towels for application. I prefer the half-sheet paper towels.  
Assorted sanding blocks, pads, and profiles.  
Optional vacuum chuck.  
domet flannel buffing wheel with Don Pencil Plastic-Lacquer Compound or other plastic  
polishing bar compound.  
Novus #2 Plastic Polish  
Clean domet or canton flannel buffing wheel.



### Surface Preparation

Surface preparation depends on the material being finished, but generally, a 400 to 600 grit sanded surface is more than adequate. Large voids need to be filled with thick CA or epoxy and then sanded flush if a level surface is desired. Keeping everything clean and dust free is also very important. Dust will show through the finish and be particularly noticeable on darker pieces of wood. I will generally clean the surface with denatured alcohol, lacquer thinner, acetone, or mineral spirits, then blow the surface clean of debris with compressed air.

### Application



Depending on the diameter of the piece, the speeds should range from 250 rpm to about 650 rpm. For example, I generally apply finish at about 500 to 600 rpm for a 4" diameter piece.

I start the application by wetting a paper towel with accelerator. This does two things: first it re-cleans the surface, and second it deposits amine on the surface. Amine is the chemical that accelerates the curing of CA. It is OK to put wet CA over accelerator, but you should never apply accelerator over wet CA. This will cause a reaction that cracks the wet CA and ruins the finish.

I use thin (5 CPS viscosity) CA on larger pieces, as it is easier to apply. The centrifugal force of the piece will sling or force thicker CA's into ridges on the surface, which makes it difficult to get an even coat. It is better to apply many thin coats than just a few thick coats. In essence, what we are trying to do is build up finish smooth and thick enough to be sanded without going through, and then polishing it to a high gloss.

I start the application of the CA itself with a half sheet of paper towel folded into a pad about 2"x3." This gives a pad that is big and thick enough to hold enough CA that it can wet the entire surface of the piece. Be cautious of the amount of CA that is applied to the paper towel. If it soaks through the pad it is going to stick to your hand and the thinner CAs mixed with amine can be a hot combination. It will cure so quickly it can give you severe burns when in contact with you skin. The wearing of nitrile gloves can give a little bit of barrier to help prevent burns to you skin. I apply the CA with just enough pressure to fully wet the surface and make a single pass across the piece. If it does not wet the piece in one pass that is OK, just start off with the next pass at the point that it did not wet the surface and finish moving across the piece.

Between applications, make sure the surface is dry to the touch and then apply another coat. I generally put 3 full wet coats on the piece. Next we are going to lightly dampen another paper towel pad with accelerator. Not wet-but just barely damp. The accelerator that I use has acetone as a carrier. If the pad is wet it will melt the CA already applied so a barely damp pad is ideal. The reason accelerator is applied is to help cure the coats of CA underneath. This helps minimize shrinkage that happens with all finishes.

I will use the above procedure until I get 15-20 thin coats of CA. If the surface is rough with heavy ridges between the 3 wet coat procedure, I will sand with 320-400 grit paper across the ridges to flatten them. After flattening ridges, clean the surface with white mineral spirits and wipe dry. Then use a pad dampened with accelerator to rub the surface as the piece turns before continuing CA application. If you are sanding between the 3 wet coats, then additional coats may be needed to insure there is enough build.

### Finishing the Bottom:

This is the stage that the bottom of the piece needs to be finished. Without a vacuum chuck, this is the hardest part, but can be done with practice. The tenon needs to be removed. Typical methods can be employed, i.e. jamb chuck, or vacuum chuck. Sand the bottom and prepare it for finish. The vacuum chuck is the easiest way, but for a long time before I had a vacuum chuck, I used to apply it by hand simply wiping on the CA in a circular motion. It is more difficult to get an even finish but can be done with practice. With the vacuum chuck, you apply the finish as outlined above until the desired buildup is achieved.



## Sanding:



In some ways this is the most important part of a good finish. Sanding is where a good finish is made or lost. I will start with the finest grit possible and it really depends upon how heavy the ridges are on the surface. As mentioned before, the ridges are caused by the centrifugal force of the piece as it spins. These bumpy rings need to be flattened or leveled. Both dry and wet sanding can and are employed in this step of the finishing process.

I generally start with 320 to 400 grit paper. I use a soft 3M wet sanding pad but have also used the different hook and loop papers with flexible sanding blocks. Papers such as Abranet, Norton 3X and others available from various vendors all work well. I do not power sand or sand with the lathe running. I do this by hand while the piece is still mounted on the lathe. I sand **across** the ridges to flatten them. With the coarser grits such as the 400, I usually do not flatten the ridges completely. I will let the next finer grit bring the last of the ridges down. Since we are working through the grits, I want the scratches on the surface to be as shallow as possible. Next I will go to a 600 grit paper, and to 800 until the surface is flat or level and doesn't have any noticeable ridges left. Be sure to be gentle at edges. I will use shaped sanding blocks to sand recessed areas or coved areas as needed, but edges have less build-up and are prone to "sand through" so be gentle in those areas.

Next, I will start the wet sanding process. I prefer the 3M Imperial Wet color sanding papers. 3M papers were developed for automotive finishing and hold up very well to wet sanding, cutting better and leaving a better finish. I will usually start with 1500, but will sometimes start with 1000-1200 if the surface is not very level. If the piece is completely sealed, I wet sand in water with a little dish detergent. But if you are worried about sand-through, use the white mineral spirits. It has a little bit of an oily feel, and if you sand though it, will not raise the grain and the surface can be repaired if needed. It is also pretty gentle on the skin compared to other solvents. I will generally sand through the grits until I reach 2000. At this point, if you want to go to micro mesh, start at 6000 and

work to 12000. Again, be aware the edges are prone to sanding through more than any other area of the piece.

I have also found that dry sanding can achieve good results if the proper materials are used. I have found that products such as Abralon from Mirka and SAI from Switzerland both make similar products that work very well. They can be purchased in multi-packs that will supply you with grits from 500 to 4000. Going through these grits will get you to a very similar surface to wet sanding.

At this point with my mixed media pieces, I will let them rest in the wet sanded state for at least a week. This is not as important with an all-wood piece. I have found that I can finish and polish that day or the next day and the finish does not change any great deal. Finish shrinkage is more noticeable with my mixed media pieces. If shrinkage occurs, then I will re-wet sand the piece with 2000 paper to get the surface flat/level.

#### Polishing:



This is the final step. I start with buffing the piece. A Domet flannel wheel loaded lightly with Don Pencil's plastic lacquer compound works best to remove heavy scratches. I have also found that white diamond works but not as well as Don's product. What is nice about the CA finish, is it's not nearly as fragile or easily burnt like other finishes such as lacquers and poly finishes. I buff until I feel it's as scratch-free as possible. I like to look at the surface under halogen light, as it seems to show fine scratches better than other light sources. The final step is hand rubbing with the Novus #2 plastic polish. Novus is

essentially a very fine rubbing compound. I squeeze a little on the surface and rub it with my bare hands (usually on my lap covered with a terry-cloth towel). The piece will be pretty slick so be careful not to drop it. I rub it out with my bare hands because I found most cloth can scratch the surface and my skin does not. I then buff the residual compound off with a clean Domet or Canton flannel wheel. At this stage, if there are still scratches, start over buffing with the Plastic Lacquer Compound and hand rub with the Novus until scratches are gone.

The results are a beautiful, durable long-lasting gloss finish that can be applied by anyone.