

Great Polyurethane Finishes Demo

by Carl Ford, 01/10/2013

Want to learn how to get a great tough "Baby Bottom Smooth" finish with only 2 coats of Polyurethane? Then this is the demo for you!

This demo shows the sequence of sanding, oiling, spraying, and buffing steps I used to get a Great 1st Class Polyurethane Finish. A practical finish for the every day man!

Why Polyurethane rather than Lacquer?

Do you think Lacquer finishes are the only way to go? Think again! Polyurethane is fast, easy and tough.

Lacquer is great for things you want to show in a high end gallery or keep in a display case and never let people touch.

I like to hand my work to people. **I want people to experience my work, not just see it.**

I am not interested in creating work that will sell for 1000's of dollars in a high end gallery. Thus Polyurethane is a tough almost water proof finish that is great for my work.

You DO NOT have to settle for a 2nd class finish just because it is Polyurethane! If your are willing to go thru just a **few** of the steps required to get a Great Lacquer finish then you can get a Great Polyurethane finish in less time. (Just 2 coats of Poly.)

Yes, Polyurethane can never match a Fantastic 50 Hand Rubbed coats of Lacquer finish. But, Poly is as good or better than a so-so average to poor Lacquer finish that is created by most people.

I prefer a Semi-Gloss or Satin finish but you can also easily create a Gloss finish with Poly.

Known your Customer. Keep the Intended Use in Mind

You need to know your customers and their intended use. Then create work with a finish that is appropriate.

If you sell or give a piece with a Lacquer finish to someone. A flawless Lacquer finish that you spent countless hours creating. Then you go visit them one day and see them taking it out of the dish washer. They ruined your lacquer finish! But, who is wrong? You or them? The customer is always right so you are wrong. You should have created work with a more appropriate tough finish like Polyurethane!

If something is going to a high end gallery or a display case type person then use Lacquer. Otherwise use Poly.

If something is going to be handled often then use poly.

If someone is paying big bucks then go with 50 hand rubbed coats of Lacquer otherwise use Poly.

If you want to create affordable work then Poly is often the best finish. Time is money!

My Polyurethane Process In a Nutshell

Here is a summary of the polyurethane process I use to create great finishes. For more details see "Carl Ford's Detailed Polyurethane Process:" on page 5

1. Sand Raw Wood to 220, Steel Wool and Buff.
2. Apply Polyurethane (Gloss if 1st coat, Gloss or Semi-Gloss if 2nd coat).
3. Repair any drips (Scrap them off with Razor blade held at **90 degrees** to work).
4. Sand with Abralon (360 grit if 1st coat, 550 or greater if 2nd coat, or skip if not needed on 2nd coat)
5. Rub with Synthetic Steel Wool ("Ultra Fine" for 1st and 2nd coats)
6. Power buff with Cloth Wheel (DO NOT use wax!)

Repeat steps 2 to 6 for 2nd coat of Poly.



Chalk

Eraser

Note: In some ways my system is similar to the Beall Buff System but I DO NOT use any wax or buffing compound. I use an Abralon Sanding Disk step in the place of compound. Compound is really wax. Many well known professional turners advise against using wax because it picks up dirt and moisture over time and turns gray. Wax and compound does not work well on natural edge bowls with the bark on. It just makes a mess in the bark.

Tools and Supplies

MinWax Fast-Drying Polyurethane

- I ONLY use “Minwax Fast-Drying Polyurethane” from a **spray can!** The oil based one, not the water based stuff.

It's important to pick a brand and stick with it. Learn what it does. Learn to work with it rather than against it.

- I use “Gloss” and “Semi-Gloss” Minwax Polyurethane purchased from local hardware store.
- I have made Minwax my favorite because I can get it at the local hardware store. They sell a lot of it. Thus I can get “fresh” cans of it.
- I would be happier with Minwax Poly if it was a little more sticky and did not run so easy. But, it does have good self leveling properties and I can get it locally.

• Which nozzle you have on a spray can is very important!

Minwax poly now almost always comes with the better blue colored “Fan Nozzle” that creates a very fine spray. The standard nozzle that comes on most spray cans is not as good. See photos.

- Beware! Minwax also makes Indoor/Outdoor “Helmman Spare Urethane”. It is designed to never really dry hard. **Thus it is no good!**

If it does not harden then you can not scrap it, sand it or steel wool it! **It will NOT work!**

- I don't like “Water Based” Poly.

The truth is I have never really tried it. Chemically it is completely different from oil based Poly. I have spent years developing a finishing system that works with oil based Poly. I don't want to spend more years and money developing a new system based on water based Poly.

For me oil based Poly is not broken. So don't mess with it!

- I don't like “Wipe On” Poly.

It takes too long to dry. It is too thick. It takes a long time for any drips to show up.

Drips show up too late to be easily wiped off. When the poly dries the drips tend to be very soft and stay soft for a long time. You can ONLY scrap off hardened drips. You **can not** scrap off soft drips!

- I don't like “Salad Bowl Finish”.

It only comes in a can. Not in a spray can. It is thicker than “Wipe On” poly. So I don't like it for the same reasons I don't like wipe on poly.

- I PERSONALLY don't believe in “Salad Bowl Finish”

If you read the label on a “Salad Bowl Finish” can it has basically the same metal driers etc. that go into any other Poly. It's the same stuff with a different label. And costs a lot more.

I personally think “Salad Bowl Finish” is just a finish manufactured by some one who has taken out a lot more product liability insurance. You are paying for the extra insurance.

No magazine wants to get sued. So no magazine is willing to flat out state “Salad Bowl Finish” is BS. But, if you read between the lines you get the message. They all seem to imply that any fully cured Poly finish is food safe.

The IMPORTANT thing is that the Poly must be FULLY CURED before it comes in contact with food. Don't do something stupid like finish a bowl one day and give it to someone the next day!



Good Nozzle



Eraser

Chalk

Abralon Sanding Pads (Manufactured by Mirka)

- **My entire Polyurethane Finishing process only works if you have an Abralon pad!**

Nothing else works like Abralon! Accept no substitutes!

- I only use the 360, 500, 1000 and 2000 grit Abralon pads

Mostly just the 360 and 500 grit pads.

I only use the 6" Abralon Pads

The 2" and 3" Abralon Pads sold by popular Woodturning Suppliers are way to expensive and wear out way to fast if you try to power sand with them!

- I purchase my Abralon pads on Ebay from Bowling Alley Suppliers.

Based on what I see on the web, Mirka sells the **same** Abralon pads to Bowling, Automotive and Woodworking industry at different prices. Woodworking places are the most expensive. Bowling is the cheapest.

- I just look for a supplier on Ebay that will sell me a box of 10 mixed grit 6" Abralon pads.

You specify the grits you want. Ask for something like 2 of 360, 3 of 500, 2 of 1000, 2 of 2000.

!On 12/26/2012 I purchased a box of 10 pads for only \$23 (\$2.30 each) + free shipping. They are like \$6 to \$8 each on Amazon + shipping.



8" Buffing Wheel, 4" Bowl Buff, and 8" Long Buffering Adapter

- I like an 8" SOFT Flannel Cloth Wheel. I like "Flannel" wheels better than "Linen" wheels. (i.e. the last wheel in the Beall Buffing System).

SOFT wheels DO NOT have multiple rows of stitching. Multi rows of stitching creates a HARD wheel.

- **I prefer to get my buffing stuff directly from Don Pencil. www.donpencil.com**

1 of 8" buffing Wheel, Finest all Dumet Flannel Buffing wheels (40 ply), #W103, \$15 on 1/10/2013

1 of 4" Bowl Buff, #BB4W, \$12 on 1/10/2013, Or 3" Bowl Buff?

1 or 2 of 8" or 12" Buffer Adapter, # and price varies based on your lathe spindle size (1 1/4", M33, etc). Note: The adapters are listed under "Specials" on Don's web site on 1/10/2013.

I only have an 8" Buffer Adapter. I just noticed that Don is now selling 12" ones. I really wish I had a 12" one rather 8" Some times I have problems with big bowls running into the head stock.

I would also purchase a 4" buffing wheel for the inside of smaller bowls. I like round wheels better than spherical bowl buffs. I just noticed these on Don's web site. I don't have one. But, I will soon!

1 of 4" buffing Wheel, Finest all Dumet Flannel Buffing wheels (40 ply), #W403, \$6 on 1/10/2013

- I attach the Buffing Wheels to Long Buffering Adapter with a local hardware store 3/8" bolt and fender washers.
- I don't like the Buffering Adapters sold by Beall. They are way to short.
- The system were you put 3 wheels all on the same shaft between centers is no good. The wheels are to close together. And you can not mount a Bowl Buff on a shaft between centers.



Chalk

Eraser

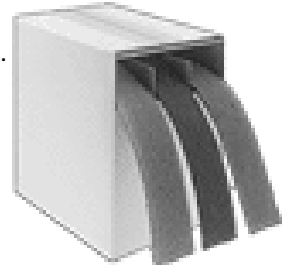
Synthetic Steel Wool (aka Nylon Mesh Abrasives or Scotch-Brite pads)

- For finishing with Poly I only use "Silicon Carbide Ultra Fine" Gray Synthetic Steel Wool. The quality of pads you get from local big box stores often sucks or they are way too expensive.

I buy my synthetic steel wool in 2" x 30 ft rolls from www.mcmaster.com part # 4659A44. \$18 per roll on 1/10/2013

- Beware! The grit of the pads based on color varies! You can get gray pads that are fine, medium or course! It depends on if they are Aluminum Oxide or Silicon Carbide.

Search for "About Nylon Mess Abrasives" on www.mcmaster.com web site for a good summary table.



Blue Flex Sanding Disks and Interface Pads

- I like the "Blue Flex" sanding disk sold by Vince's Wooden Wonders. <http://www.vinceswoodnwonders.com>

- **Blue Flex Disks**, I use 2 3/8" disks and 3 3/8" disks I use 80, 120, 150, 180, and 220 grits. \$4.20 or \$4.60 for 25 disks on 1/10/2013.

The velcro on Blue Flex disks is glued onto a very tough sandpaper. They work wet or dry.

Heat will build up and soften the glue if you sand aggressively with these disks. When you try to remove the disk the velcro will get screwed up. To avoid this problem you need **Interface Pads!**

- **Interface Pads**, I use 2 3/8" & 3 3/8" to match disks.

I use 1/4" thick "Firm Yellow Tapered Interface Pads" for 80, 120, and 150 grits.

I use 3/8" thick "Soft Blue Interface Pads" for 150, 180 and 220 grits.

1 interface pad for each grit works best! Allows quick and easy grit change without screwing up the velcro.

- **Thin Back Up Pads**, 2" & 3". The thing that you chuck up in the drill. 2" pad goes with 2 3/8" disks and interface pads. 3" goes with 3 3/8"

I like the 1/4" thick "Heavy Duty Thin Backup Pads" (only sold by Vince?) better than the thicker pads. They are better at getting into the tight space between headstock and bowl.

If you are using interface pads to adjust softness of pad then you don't need and really don't want a thick back up pad with lots of flex.



Porter Cable Stikit Sand Paper

- I have 80, 120, 150, 180, 220 grits. But, I only use 220 grit for final hand sanding of raw wood with the grain when finishing Poly.
- I get it from Amazon. 4 1/2" x 10 yard roll. \$15 on 1/10/2013.
- There are other sand papers that are virtually the same. 3M Stikit? Kling-spor? They use to sell this paper in local hardware stores. I like it. I am too lazy to find something else I really like.



Paper Towels

- I ONLY like the white "Scott Rags in a Box". I get them at local hardware store.
- Run of the mill kitchen paper towels are too hard and not absorbent enough.



Eraser

Chalk

Carl Ford's Detailed Polyurethane Process:

1. Sand Raw Wood up to 220 Grit (or beyond 220 if that floats your boat)

- Power sand thru the grits up to 220 grit using your favorit sand paper.
- I never sand beyond 220 grit because I use faster and easier synthetic steel and buffing to improve the surface beyond 220.

When you spray on the 1st coat of poly it is going to ripple (orange peel) a little regardless of how good a job you do applying it. In my not so humble opinion this rippled surface is no better than a 220 grit sanding job. Thus there is no point in going beyond 220 when sanding the wood before applying poly.

If you read poplar flat boarding magazines they rarely suggest sanding raw wood furniture projects beyond 220 grit.

If I was in the business of selling sand paper then I would tell everyone to sand up to 10 billion grit. Otherwise I just don't see the point in going beyond 220.

- My favorit sand paper is the "Blue Flex" disks from "Vinces Wooden Wonders". See "Blue Flex Sanding Disks and Interface Pads" on page 4
- I power sand using 2" or 3" disks.

Always use the largest disk possible. Larger disks have more surface area. So you get more done and use less disks.

- Sanding on or off the lathe really does not make any difference. They both work.

The important thing is to Power Sand using a sanding disk held in a drill.

Just holding fixed sand paper up to a spinning piece on the lathe does not work. It creates too many very uniform scratch lines that are easy to spot.

- I mostly sand off of the Lathe using a Drill Press. See photo at right.

I mostly turn only once to final thickness in green wood. So most of my bowls go oval during the drying process. Thus most of my power sanding is done off of the lathe with a sanding disk mounted in Drill Press. This frees up both of my hands to hold and move the work around under the disk.

- When I sand on the lathe, I DO NOT follow the conventional wisdom that says you should run the lathe slow.

I start with 80 grit sand paper and run the lathe at 1000+ rpm. At fast speed the course 80 grit sand paper does not get a chance to create DEEP scratch marks. I can sand aggressively and create only shallow scratch marks.

I slow the lathe down as I go thru the grits. So, I end up sanding at 220 grit with the lathe running around 300 rpm.

- I sand thru 80, 120 and 150 grits using a 1/4" thick "Firm Yellow Tapered Innerface Pad" from "Vinces Wooden Wonders". See "Blue Flex Sanding Disks and Interface Pads" on page 4

The firm pad, allows me to remove material fast.

- I then sand thru 150, 180 and 220 grits using a 3/8" thick "Soft Blue Innerface Pad" from Vince.

The soft pad flows around contours and does not leave any edge of pad marks.

So I end up sanding at 150 grit (my cross over point) with both the firm and soft pads.

- I always finish up by **hand sanding with the grain!**

I use 4" wide 220 grit "Porter Cable Stikit" sand paper. It comes with glue on the back of paper.



Chalk

Eraser

I cut a 3" long piece off of a 4" wide roll and fold it over so it sticks to it's self. Now I have sand paper on both sides that will not easily slip out of my hand. The fold creates a nice tight round edge that can be used to sand up close to fine details.

2. Rub Raw Wood with Synthetic Steel Wool

- I rub the entire piece with "Ultra Fine" Synthetic Steel Wool

I cut a 3" long piece, off a 2" wide roll of "Ultra Fine" Synthetic Steel Wool (see "Synthetic Steel Wool (aka Nylon Mesh Abrasives or Scotch-Brite pads)" on page 4) and go at it with gusto. With the wood grain!

Or, I cut a 2" or 3" disk of "Ultra Fine" Synthetic Steel Wool and attach it to drill pad via a 1/4" thick "Firm Yellow Tapered Interface Pad" from Vince and go at it with Drill Press. Beware! Synthetic steel wool has the tendency to eat up the hooks on your velcro so don't forget the sacrificial interface pad!

- My goal is remove any raised grain now rather than waiting until after the 1st coat of Poly.
- I also don't want to waste time sanding beyond 220 grit when the same results can be achieved faster and easier with Synthetic Steel Wool.

When you try to sand beyond 220 grit with higher grit sand papers any slight mishap with the sharp edge of the sand paper, etc. can mess up the finish and send you back to square one. Synthetic Steel Wool does not have any sharp edges!

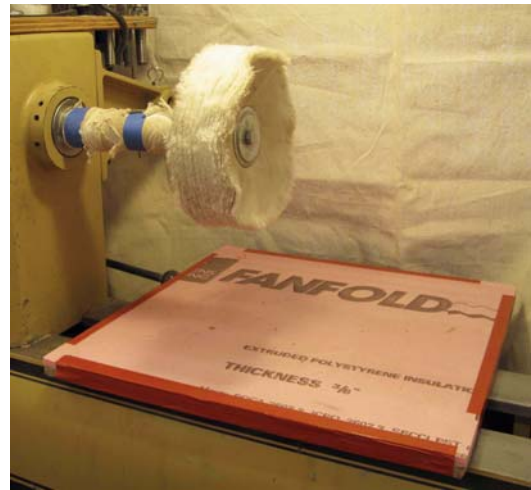
3. Power Buff Raw Wood with Cloth Wheel

- If you want to end up with a Great Poly finish then you need to start with a great finish under the Poly!
- Remember the old Spindle Turners trick? After they are done turning, they hold a handful of wood chips against the spinning work to burnish it.

I want to do the same thing on bowls, hollow forms etc. Wood chips don't work well for this because they often fall out of your hand and they often scratch the work if you have already sanded to 220 grit.

Thus I use a cloth wheel rather than wood chips to burnish my work.

- I use an 8" SOFT Flannel Cloth Wheel attached to Lathe via a 8" Long Buffing Adapter. (The Wheel used for Carnuaba Wax in Don Pencil or Beall Buff System.) See "8" Buffing Wheel, 4" Bowl Buff, and 8" Long Buffing Adapter" on page 3



- **DO NOT put any Wax on the Buffing Wheel for any reason come hell or high water!** Poly will not stick to wax!
- Buff both the inside and outside of pieces.

I buff the inside of bowls over say 8" using the 8" wheel.

For smaller bowls I use a 3" or 4" spherical bowl buff.

- **Beware!** The buffer likes to rip the work out of your hands. To prevent this grip each piece firmly with your elbows tucked in by your side. Keep the work as close to your body as possible!

Make sure you have at least one hand around the rim of bowls. Some fingers on the inside and some on the outside of bowls.

Keep one finger in the hole on hollow forms!

I often buff my fingers. It does not hurt and is better than bouncing pieces off the floor. Latter, women go wild over my nice shiny finger nails.

- **Important!** The speed of the lathe determines the hardness of the wheel!

As you turn up the speed the wheel becomes harder!

Start slow! A variable speed lathe is a huge plus.

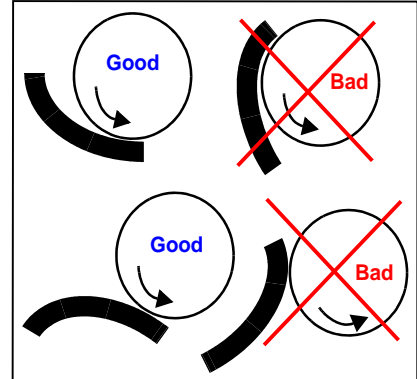
Eraser

Chalk

• **Important! NEVER use the Top of the Buffer Wheel or Buff the Top Edge of a Bowl!**

You will “catch” the edge and the bowl will fly across the room!

With the lathe running in forward the buffing wheel is turning towards you. Thus you should always buff away from yourself. i.e. use the bottom of the wheel to buff the bottom edge of the bowl. Turn the bowl around 180 degrees rather than trying to buff top of bowl.



- Pad the hard steel ways of the lathe.

I cover the ways of the lathe with a sheet of 18" x 18" plywood covered with 3/8" of styrofoam insulation. The pink stuff in the above photos.

When the buffer rips a piece out of my hands it bounces off the soft insulation rather than steel ways or concrete floor.

- Pad the 8" Long Buffing Adapter.

Wrap the buffing adapter with paper towel and hold it in place with some masking tape. Let the edge of paper towel flap around a bit. See photo at right.

The paper towel creates a soft surface that does less damage to the edge of a bowl if I accidentally touch it while buffing inside of a bowl.

The flapping paper warns me when I get to close.

- Buff until the wood glows with a nice shine.



4. Apply Your Favorit Oil Finish

- If you are going to apply an oil finish now is the time todo it!
- I do not oil Cherry wood. Over time the pieces become to dark. I oil Ash wood, etc.
- My favorit oil finish is “Watco Danish Oil - Natural”

I like Watco because you can get it at the local hardware store (it is now manufactured by MinWax) and it lasts forever in the can.

You can pour Watco out of the can, use some, then put the rest back in the can and come back months later and it is still good. None of that expensive Bloxygen BS.

Watco is very simple and easy to use. Not to much smell.

I follow the directions on the can. Coat with Watco, wait 1/2 hour, coat with Watco again, wait 1/2 hour, then wipe off excess with paper towels.

Yes, Watco has gotten a bad wrap in the past for spontaneous combustion. Anything with Tung Oil in it will spontaneously combust! This means Watco has lots of Tung Oil in it. That is what I want!

I spread my wet Watco paper towels out on rim of trash can to dry. No problems.

Use paper towels not rags! Always use a fresh paper towel.

DO NOT wad up the wet towels and leave them in a pile!



Chalk

Eraser

- **Let the Oil Finish dry for at least a week! That's right a week!**

This is where many people go wrong! They don't let the oil dry long enough! It must be completely dried and cured!

5. Power Buff After Oil Finish

- If you want to end up with a Great Poly finish then you need to start with a great finish under the Poly!
- After Oil Finish has completely dried I buff it. I use the same process I used to buff raw wood. See "3. Power Buff Raw Wood with Cloth Wheel" on page 6.

Note: I may rub with Synthetic Steel Wool before buffing if needed.

- **DO NOT put any Wax on the Buffing Wheel for any reason come hell or high water!** Poly will not stick to wax!

6. 1st Coat of GLOSS Polyurethane

- The first coat of Poly should ALWAYS be "GLOSS" rather than "Semi-Gloss" or "Satin".

Why? Because they create Semi-Gloss or Satin by adding something to gloss poly to make less it transparent. They add something like very fine talc power. Thus if you use multiple coats of anything other than gloss then the finish is going to look muddy.

You should wait until the last coat of Poly to adjust the gloss of the finish. i.e. if you want a 2 coat Semi-Gloss finish then the 1st coat should be Gloss followed by a 2nd (final) coat of Semi-Gloss poly.

You can always tone down a gloss finish at the end with some synthetic steel wool and buffing.

The gloss is also a lot easier to sand in next step. It is easy to see where you have sanded because the gloss finish will turn dull when you sand it.

- I ONLY use "Minwax Fast-Drying Polyurethane" from a spray can! The oil based one, not the water based stuff.

It's important to pick a brand and stick with it. Learn what it does. Learn to work with it rather than against it.

See "MinWax Fast-Drying Polyurethane" on page 2 for more details.

- I don't like "Water Based" Poly. I don't like "Wipe On Poly". I don't like or believe in "Salad Bowl Finish"

See "MinWax Fast-Drying Polyurethane" on page 2 for my reasons.

- **Which nozzle you have on a spray can is very important!**

Minwax poly now almost always comes with the better blue colored "Fan Nozzle" that creates a very fine spray. The standard nozzle that comes on most spray cans is not as good.

- **Important!** I use a 16" Round Turntable when painting bowls.

The turn table allows me to easily paint all sides of a bowl. I often spin a bowl around several times while painting it.

I made my own turntable out of scrap plywood and "Lazy Susan" bearing from local hardware store.

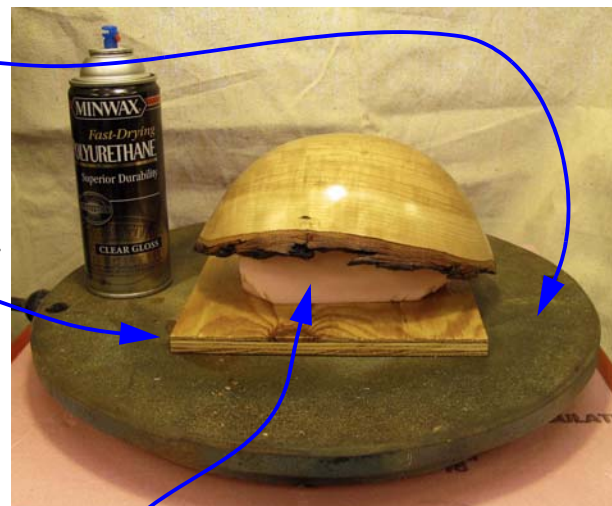
- **Important!** I use what I call "Project Boards" when painting bowls.

My project boards are just 8" x 8" scraps of plywood.

I put the bowl on top of my project board on top of the turntable before I start painting.

When I am done painting, I pick up the project board and move the bowl into my nice warm dust free drying room.

- **Important!** When painting the outside of bowls I use scraps of 2" styrofoam insulation to hold the edges of the bowl up off of the project board.



Chalk

Eraser

- **Very Important!** I paint the inside and outside of bowls in completely separate steps.

First I paint the outside of bowl and let it dry overnight! Then I paint the inside of the bowl.

I have learned not to rush things. It just makes a mess that takes longer to fix in the long run.

- **Very Important!** I use the following procedure when spray painting so I DO NOT end up with too much paint where it drips easily!
 - a. I start by painting the rim of bowls **with the can held low!** The idea here is to paint the 1st bottom third of the bowl that contain the rim of the bowl with the overspray falling off in intensity in the 2nd third of the bowl and almost no overspray in last third of the bowl.
Slowly rotate the turntable with one hand while you are spraying at the same time with other hand.
DO NOT put on too much paint. You MUST allow room for overspray in next 2 steps.
 - b. Move the can up some and paint the middle third of the bowl while rotating the turntable.
The overspray should now fall off in the first and last third of the bowl.
 - c. Move the can up and paint last top third of the bowl while rotating the turntable.
 - d. Move the can way up and back. Then spray over the entire bowl until you achieve uniform coverage. **You MUST create a "FULL WET COAT" of paint.**

First Paint the Outside of
Upside Down Bowl



Then Paint the Inside of Bowl



- **What is a "FULL WET COAT"?**

It is an automotive painting term that is easier to see than describe. If you try to spray paint with only light mist coats of paint, the paint dries before it hits the work. This is no good. The very fine particles of dried paint create a hazy paint job.

When you achieve a Full Wet Coat the surface of the work should look nice and shiny. The paint should be almost ready to drip.

You need a Full Wet Coat so the paint will "self level". Mist coats are too thin to self level!

A big problem with trying to achieve full wet coats in auto paint jobs is you get "Orange Peel". A rough surface on the paint that looks like the skin of an orange. You don't need to worry about this too much with Minwax Poly. Minwax Poly is pretty good at self leveling. This removes the orange peel. But only if you create a Full Wet Coat.

- **Very Important!** Inspect your work right away. **Then wait 10 minutes and inspect it again!** Wipe out any drips now!

After you are done painting inspect your work very carefully. Look for any drips. Now is the time to wipe them out. Don't wait for the paint to dry! **Scraping and sanding drips out latter is a lot more difficult!**

Use **soft** paper towels to wipe out any drips. I like the white "Scott Rags in a Box". I will not use anything else! Kitchen paper towels are too scratchy and not absorbent enough.

It things are not too bad then you can probably just lightly respray a small area. Otherwise wipe off all of the poly and spray again. If really bad then wait a day for things to dry and start over.



- If you find a drip after waiting 10 minutes the Poly is ready starting to set up. You will probably need to use some Lacquer thinner on the paper towel. Then start over from scratch after waiting a day for things to dry.
- **Important!** When painting hollow forms I put them on a hanger wire before I start painting.
- I use the wire to hold them and move them around while painting them. I hang them up so I can paint the bottom and all of the sides at the same time. I hang them up to dry.



Chalk

Eraser

For small mouth hollow forms I create handle like the handle on kitchen pots. I bend a 14" long piece of hanger wire in a U shape. Then bend the ends up at 90 degrees so each end has a 3/4" long hook on it. Then compress the wire and insert it into small mouth of hollow form.

For large mouth hollow forms I use a 1/4" threaded rod with popsicle sticks that stick out and catch under the rim of the large mouth

7. Wait for 1st coat of Ply to Dry

- **Wait at least 24 hours** (a week is better) for 1st coat of poly to dry and become HARD.

You can NOT scrap or sand soft Poly!!! You will just end up with a gooey mess.

8. Repair any Drips after 1st coat of Poly Dries

- You are not going to have any drips. Right? Well they happen.
- Now is the time to scrap out any drips!
- **DO NOT try to sand out the drips!**

When you try to sand out drips you almost always screw up the surrounding poly. If you accidentally sand thru the surrounding poly to raw wood you are screwed! After you respray you will never get the same shine on entire piece.

- **DO NOT try to cut off the drips** with a razor blade held at a **LOW ANGLE!** You almost always end up cutting thru to bear wood. Then you are screwed!
- **Scrap out the drips with a Single Edge Razor Blade held at 90 degrees to work.** (Perpendicular to the work). See photo.
- Scrap just the drip. The scrapped area will turn hazy. Scrap until the hazy area just starts to blend in with surrounding non dripped surface.
- Most of the time you DO NOT need to repaint with poly! Just continue on to the next sanding step. While sanding create a uniform surface around the drip and then buff. This often works even when it is the last coat of poly that has a drip.
- For drips on the inside of bowls you need to create a mini razor blade scrapper with rounded corners so the sharp corners on razor do not dig in! See photo.

Create a 1/2" wide razor blade by VERY CAREFULLY cutting thru only the BACK reinforced edge of a single blade razor blade with a pair of wire cutters. Then hold the razor blade between pliers and snap off the rest of the razor blade. Use a file to round over the corners.

9. Sand with 360 Grit Abralon after 1st coat of Poly

- My goal here is to remove any raised grain or dust that got into the 1st coat of poly.

If you want to end up with a Great Poly finish then you need to start with a great finish under the 2nd coat of Poly

- Lightly HAND sand the entire surface with 360 Grit 6" Abralon pad. See "Abralon Sanding Pads (Manufactured by Mirka)" on page 3

As you sand the surface will change from gloss to a dull finish.

I LIGHTLY sand until the entire surface turns to a dull uniform finish.

- **My entire Polyurethane Finishing process only works if you have an Abralon pad!**
- Nothing else works like Abralon! Accept no substitutes!

Only Abralon allows you to sand Poly with out big scratches!

I have tried lots of other sand papers. They are all to scratchy. Either the surface is to scratchy or if you catch the edge of the sand paper it leaves a big scratch. Abralon does not scratch!



Eraser

Chalk

- Abralon pads are not cheap but can be used for a long time if you keep them in good shape. Use compressed air to frequently blow the fine dust out of them. You can also wash out the pads with water.
- I put X marks on the back of my Abralon pads to keep track of much I have used them. If a fresh 360 grit pad is too much and a 500 grit pad not fast enough. Then I use a worn 360 pad.

10. Rub with Synthetic Steel Wool after 1st coat of Poly

- The goal here is to remove any fine scratch marks left by Abralon pads and create a very uniform dull surface.
- I use the same process I used to steel wood raw wood. See "2. Rub Raw Wood with Synthetic Steel Wool" on page 6.

11. Power Buff after 1st coat of Poly

- Time to buff again. If you want to end up with a Great Poly finish then you need to start with a great finish under the 2nd coat of Poly.
- I use the same process I used to buff raw wood. See "3. Power Buff Raw Wood with Cloth Wheel" on page 6.

However DO NOT run the buffing wheel to fast. Lots of heat will melt the Poly finish and make a mess. Remember the buffing wheel becomes harder as you run it faster!

- When you get done buffing the piece will look so good you will be tempted to skip the 2nd coat of Poly.



12. 2nd Coat of Gloss or Semi-Gloss Polyurethane

- For the 2nd Coat of Poly you can use Gloss or Semi-Gloss.

I like Semi-Gloss. But it really does not matter that much because when I buff the 2nd coat of Poly I can adjust the gloss based on how much I buff.

- I use the same spray process I used for the 1st coat of Poly. See "6. 1st Coat of GLOSS Polyurethane" on page 8.

13. Wait for 2nd coat of Poly to Dry

- **Wait at least 24 hours** (a week is better) for 1st coat of poly to dry and become HARD.

You can NOT scrap or sand soft Poly!!! You will just end up with a gooeey mess.

14. Repair any Drips after 2nd coat of Poly Dries

- Use the same drip repair process you used after the 1st coat of Poly. See "•. DO NOT try to sand out the drips!" on page 10.

15. Sand with 500 Grit Abralon after 2nd coat of Poly

- To sand or not to sand?

I some times skip this step after the 2nd coat of Poly if there is not too much dust in the 2nd coat of Poly. If I can buff it out, I don't sand.

- Often I sand only **extremely lightly** with a worn 500 grit Abralon pad. So it is more like sanding with 1000 grit Abralon pad.
- Use the same Abralon sanding process you used after the 1st coat of Poly. See ". If you want to end up with a Great Poly finish then you need to start with a great finish under the 2nd coat of Poly" on page 10.
- If you had to repair a drip in the 2nd coat of Poly then you probably need to really sand the entire piece with 500 grit Abralon. Followed up by 1000 grit and then 2000 grit. The 2000 grit will get you back to the point where you will be able to Buff to a nice finish after Synthetic Steel Wool.

16. Rub with Synthetic Steel Wool after 2nd coat of Poly

- Very lightly rub with "Ultra Fine" Synthetic Steel Wool.
- I use the same steel wool process I used after the 1st coat of Poly. See "10. Rub with Synthetic Steel Wool after 1st coat of Poly" on page 11.

17. Power Buff after 2nd coat of Poly

- Time to buff again. I use the same process I used to buff raw wood. See "3. Power Buff Raw Wood with Cloth Wheel" on page 6.



However DO NOT run the buffing wheel to fast. Lots of heat will melt the Poly finish and make a mess. Remember the buffing wheel becomes harder as you run it faster!

- I buff until I am happy with the piece. Until the piece is done!

18.No Final Coat of Wax!

- I don't need to wax because I just buff the Poly to the shine I want.
- Many well known professional turners advise against using wax because it picks up dirt and moisture over time and turns gray.
- Also wax does not work on natural edge bowls with the bark on. It just makes a mess in the bark.
- If I was going to wax I would use one light coat of the Clear "Liberon Black Bison Paste Wax".
- I definitely **would not** use the Carnauba or Beeswax in the last step of Beall Buff System or any other hard wax. These hard waxes tend to go on in streaks and then they are hard to spread out and/or move around without a lot of heat generated by friction. Lots of heat can melt thru Poly. Lots of hard wax buffing can wipe out the bark on natural edge bowls.



Chalk

Eraser