International Association of Penturners

Sanding & Polishing Basics

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Introduction

I thought I would provide some insights I've gleaned about sanding. I have gone through the process of learning how to properly sand for the last two years myself. I started wood turning in Feb 2020, after having watched YouTube videos on wood turning for over a year. I started out with, I think, a decent knowledge base. My skill with hand tools started out fairly good, and it wasn't long before I was a sharpness snob, bought CBN wheels (Cubic Boron Nitride, this material is one of the hardest materials available, second only to diamonds), and was sharpening multiple times a project.

CBN wheel

The thing that held me up was not my turning skill, but my sanding skill. My first...well, bunch of bowls, for the first 6 months or so, had good bowls shapes and clean cuts, but were all scratched and unsightly. My sanding skill was the foundational skill I really needed to learn. So, I started putting some real effort into that. I hate sanding, even to this day, but it is one of the best skills a turner can have IMO, as it can make, or break, the finish on a piece, and the finish on a piece can make or break the piece. So, without further ado...

What is sanding?

Sanding is a cutting process. That may sound odd, since you cut the wood with your tools, right? So why is sanding a cutting process? Sanding cuts the wood differently than a hand tool like a gouge. Instead of cutting **into** the wood's surface, you are cutting **ACCROSS** the wood's surface. Sanding ***cuts*** into peaks and valleys and other unevenness in the profile of your turned items, as well as the scratches left by the previous grit (if any).

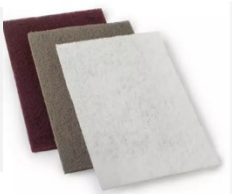
So, sandpaper is a cutting tool. It is not just a grain-flattening tool. It is in fact the abrasive grit that is performing the cutting action. Other sanding tools are also cutting tools, just with a different mechanism. Steel wool, for example, cuts fibers by the action of the steel fibers crossing wood fibers. I would describe 3M and other pads as exhibiting both behaviors...scratching like sandpaper, and fiber cutting like steel wool (excluding the 3M White Pads 2500-grit, which are non-abrasive, and what I would call a smoothing tool as they help lay down any outstanding fibers.)

What is polishing?

Similar to sanding, polishing is also a process of cutting through surface unevenness. There are two key differences between polishing and sanding. Fundamentally, polishing is the process of rubbing something to give it a shiny, even reflective surface. Polishing is usually done with a grit, like sandpaper, as the cutting mechanism, however unlike sanding where the grit is glued to a backing paper, or with a

looser bundle of cutting fibers like steel wool or 3M Scotch-Brite Abrasive pads (an open web structure made out of polyester) polish grit is usually combined with some kind of fluid base. Polish is intended to remove unwanted surface material, and smooth out surface unevenness to the point the surface brightly shines.

Steel Wool



3M pads

As polish is intended to impart an extremely smooth surface, it is not effective on rougher surfaces. It must be used on surfaces that are already quite smooth. In other words, surfaces that have already been sanded to a higher grit and exhibit a finer scale of scratches. Polish usually utilizes grits of much finer scale. Where sandpaper can be tens of microns or more, and down to perhaps 4-5 microns (i.e., 5000 grit sandpaper), polish is often in the tens of thousands of grit. Some plastic polish may be as high as 30,000 grit.

Polishing may be done by hand, or with power tools. In the case of pen blanks, the power is the rotation of the blank on the lathe, with the polish just applied to a soft rag or paper towel. Polish may also be applied with grease-based polishing compounds via soft buffing wheels on a lathe or discs in a power tool.

What is buffing?

Buffing is similar to polishing. In fact, it is often hard to find an accepted distinction, and many will often interchange the meaning of the words. In my own experience, buffing is performed with buffing wheels, usually with lower grit compounds. These compounds might be Tripoli (i.e., 800-1000 grit, a pre-polishing compound which has a medium abrasive for general cutting down, scratch removal, and buffing on acrylics) or White Diamond (i.e., 1500-1800 grit, a finer buffing/polishing compound that leaves a smoother finish), among many others.

Buffing will also impart a very shiny surface, however due to White Diamond grits (i.e., 1500-1800 grit range), the resulting surface is imparted a more satin sheen than highly reflective.

Tripoli

White Diamond

Again, buffing differs from sanding in that it involves the use of high grits (although often in the same range as high grit sandpaper), suspended in some kind of non-solid base. The act of buffing with a wheel imparts a much more appealing randomness to the cutting action on the surface of the item being buffed, which leads to a kind of surface finish that is hard to achieve with sandpaper alone.

Sanding Technique

I think this is the area where many struggle. Sanding requires effective technique to produce optimal results. Effective sanding technique involves not only how you apply sandpaper to the item being sanded, but also how you choose which grits to start with, what kind of sandpaper you use, and whether you wet sand or not, with what fluid, and when you start wet sanding. Additionally, you may also need to choose what you sand with.

Choosing a Sandpaper

There are a lot of sandpapers out there. A heck of a lot! There are also things like Steel Wool, 3M Scotch-Brite pads and other pads, etc. You will have to choose what sandpapers work best for you. Everyone is different here, and in many ways it's a personal decision. Some penmakers love to do final passes with Steel Wool, in my case I've always found steel wool fibers stuck in the wood grain after I'm done so I do not often use it. I usually use a gray 3M Scotch-Brite pad, 2000-2500-grit.

3M Scotch-Brite pads

General Purpose Pad, maroon
Similar to grade 1 steel wool
360-400 grit aluminum oxide abrasive

Ultra-Fine Pad, gray
Similar to grade 00 steel wool
2000-2500-grit silicon carbide abrasive

Light Duty Pad, white
Similar to grade 0000 steel wool
Super-fine 2500-grit aluminum silicate abrasive
Each reusable pad is 6" x 9" x 0.250"

There are actual sandpapers, there are sanding meshes, some meshes are more open than others. Some sandpapers use unique grit materials, often its aluminum oxide, but may be white fused alumina, etc. Sanding mesh allows the sanding dust to pass through and are often called "dust free". Mesh is also usually flexible, and will wrap around a blank without creasing, while papers may crease.

Some mesh, such as Mirka Abranet and Abralon (a dense open weave of polyamide fabric which the abrasive grit is bonded), may be flexible in one direction, and rigid in the other, which has its own benefits.

Mirka Abranet

Personally, I have used pretty much all the sandpapers I've been able to find. This includes your basic Dark Red Aluminum Oxide sanding rolls which have the tendency to heat up very quickly, to every kind of sanding solution to Abranet mesh, to Micro-Mesh.

In the end, I've settled on three types of sandpaper as my go-to solutions. Mirka Abranet for really tough sanding jobs (usually on larger items, rather than pens), and Norton ProSand (blue/white dry only paper) and Norton SandWet (black wet/dry paper) for most other things. Recently, I also switched from using the 6x2" gray Micro-Mesh sheets, which was my go-to wet-sand paper for resins, to Zona Paper (which is 3M Micro Graded Wet/Dry Polishing Paper).

Mirka Abranet

Norton ProSand

Norton SandWet

Micro-Mesh

Zona Paper

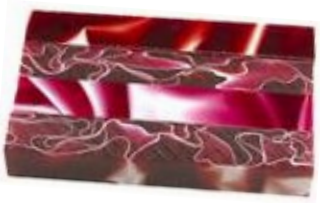
I settled on the Norton myself for two reasons. One, it seems to be highly effective, and just seems to cut better than any other papers (or discs) I've used. Two, it comes in packs of large 8x11 sheets, which I can cut down to smaller sizes (~3/4" wide, 1 1/2" or so long strips). The ability to cut the sheets to small sizes means a set of Norton sanding sheet packs lasts a LONG time and is HIGHLY cost effective! I use the Norton on pen blanks, as well as larger items, and I really love the finish it provides.

The wet/dry stuff also works wonderfully well with either water (preferably on resins), or oil (preferably on wood), and can be used to wet sand pretty much anything. Zona Paper also comes in large sheets, which I can also cut down to size. It works superbly well dry or wet, and I use it mostly for Resins.

- Natural Wood, Antler, Burls, Horn, Laminated Wood and Wood Products are considered Wood.

- Aluminite, Acrylic, Hybrid Resin/Wood, Inlace, Polyester, Poly Resin, Stabilized Wood, TruStone, are considered Resins.

Woods



Resins

The final aspect of choosing a sandpaper is grit. For large turned items, I still use down to 180 grit probably for wood, but 400 grit and up probably for Resins, and blanks I really care about. I have found that even more roughly turned pens, rarely have any tear out (which IMO often renders a turned pen blank useless), and any toolmarks or imperfections in the profile rarely warrant lower than 400 grit. On the other end, I have found that high grits contain distinct value for pen making. This was also a factor in my personal decision to settle on Norton and Zona Paper, both offer high grits. Norton SandWet goes up to 2000 grit, and Zona Paper as fine as 1 micron (which is finer than Micro-Mesh 12000 grit!)

Starting Grit

First off, I would say one of the most important tasks in sanding is choosing a proper STARTING GRIT. It is unwise to simply start with a lowish grit (i.e., 220/240 for example), on a pen blank that has been tooled to a much finer surface finish already. With effective tooling, you can turn a pen blank down to a surface smoothness that warrants higher grit sandpaper as a starting point. Depending on just how skilled you are with your tools, you may find that you can **start** at a grit of 600 or even 800.

Choosing an appropriate starting grit is important, as it helps avoid cutting too deeply with a low grit sandpaper and leaving scratches on the surface of your blank that are deeper than anything your tooling left in the first place. This can lead to a serious problem...with scratches so deep, you often need much more sanding with low grits to take care of them. In some cases, low grits can often leave deep scratches regardless due to the random rogue "larger than average" grains in the sandpaper. The often-inevitable result is a blank that has been sanded down to a too-small diameter, or even right through the blank to the brass.

So, choose an appropriate starting grit!! This should never be a canned "Always start with 240" kind of thing...examine your blank and choose the grit that will best cut the remaining ridges and bumps that have been left behind by your tools.

I myself will usually start with 400 or 600 grit sandpapers these days. In some cases, with certain woods and if I manage to tool my blank to an extremely smooth surface, I'll even start with 800. The general idea would be to start with a grit about 50% the scale of the remaining peaks & valleys, bumps etc. in your blank.

First Passes

Once you have chosen your starting grit, the first passes of sanding are the most important. The job of the first grit, and perhaps the second grit, is to cut through the remaining bumps, ridges, peaks and valleys, and even slight misshapen areas of your blank. The goal is to impart a consistent profile, and level out any unevenness, and impart consistent shape and curvature to the entire blank. This requires constantly moving the sandpaper, left to right, to eliminate burn marks or scratching the blank.

The first pass may involve using the same grit sandpaper both with the lathe on, with radial scratches, as well as lathe off, with longitudinal scratches. By scratching around the blank, then along the blank, you can guarantee that you are smoothing out any imperfections in all directions. You may also choose to do radial only with the first grit, then longitudinal with the second grit, unless the second grit simply cannot level certain imperfections. (More about alternating sanding directions in a bit.)

Alternating Grits

First off, the nature of grit. Sandpaper grits are generally designed on a 50% difference scale. This means that if you start with say 400 grit, then 600 grit sandpaper will cut through half the depth of what 400 grit sandpaper cuts, and 800 grit cuts through half the depth of what 600 grit cuts, etc. If you sand with 400 grit, then skip to 800 grit, the 800 grit sandpaper is only capable of cutting through ~1/4 the depth of the scratches left by the 400 grit sandpaper! Sanding with 600 grit will effectively reduce the depth, or "scale", of 400 grit scratches such that they match the scale of 600 grit scratches, and then sanding with 800 grit will do the same thing to the 600 grit scratches. It’s a specifically designed progressive scale that must be followed, without skipping grits, in order to achieve the most optimal result in the end.

One of two things then must occur if you followed 400 grit by 800 grit. Either your 800 grit sanding simply does not sufficiently diminish the scratches left by 400 grit sandpaper, or you spend significantly more time with 800 grit sandpaper trying to sufficiently diminish the 400 grit scratches. With enough time, you may eventually sand the surface down enough with 800 grit to diminish 400 grit scratches enough. However, it is much easier and much faster to simply not skip grits, use every grit in the series, and sand properly. Sanding with every grit can, and should, actually be quite fast. The first grit is the most important, as it levels original imperfections, tooling marks, etc. in the blank. However once that job is done, each grit should be a fairly quick pass to simply cut down the depth of the prior passes scratches, and that's all. So, use every grit! Never skip grits!

Dry or Wet Sanding

The next question you may have is should I dry sand, or wet sand? There are benefits to each kind of sanding, and it often depends on the material being sanded, and the fluid used as a lubricant for wet sanding.

Fundamentally, wet sanding is often better used with Resinous materials, while dry sanding is often better used with Wood. However, there are some woods that handle wet sanding better than others, and in some cases wet sanding at higher grits with wood is optimal.

With wood, there can be a potential consequence of wet sanding. That is the filling of the pores with sanding slurry. In some cases, this may be desirable, in other cases, it may leave unsightly sanding slurry dots or streaks that don't match the color of the wood or the intended kit platings well. Some of this is a matter of opinion, so it may be worth experimenting to find out where your tastes lie.

With resins, I'll almost always wet sand, with water, through all of the grits. In some rare cases, I may start with the first grit just dry sanding. Why? Wet sanding in effect adds a lubricating fluid that eases the cutting action of the sandpaper. If I have more significant profile smoothing to do, sometimes a dry first pass with the first grit will have better cutting action. If I choose to dry-sand a resin, I often start with the second grit dry, to minimize the depth of scratches (i.e., 600 grit, maybe 800 grit, or the equivalent Zona Paper), then use a lower grit (400 or 600, or equivalent Zona) to start wet sanding.

With resins, wet sanding can be very important to manage heat. Even with lower RPMs (I usually sand around 1500-1800 for pen blanks but may drop to 1100 for resins if necessary), heat can build up quickly with resin sanding. Water helps dissipate that heat and lubricates the grit. Water also helps you SEE the sanded surface better. Dry-sanding resins usually leaves visible scratch marks and a very scuffed up surface with the lower grit series and this affects reflection and refraction, which can often make it harder to see what the sanded surface REALLY looks like. Water fills the scratches and allows you to see the blank as it really is, with all the proper reflections and refractions.

With woods, wet sanding will usually be with oil. Water will saturate the fibers and raise the grain, which should be avoided. Water-saturated blanks can change shape. So, use oil. You can choose to wet-sand wood with oil through every grit, or you can only wet sand with the highest grits. Personally, I usually choose the latter these days. I find dry sanding through most of the grits does a better job with wood. I wet sand with, usually, walnut oil the last two to three grits. Sanding with oil will help drive the oil into the wood, and if you sand at a higher RPM, you can get a bit of friction heat going which as well will help kick off the oil polymerization process to properly seal the wood. For some finishes, putting an oil finish on first and letting it polymerize a bit can be very helpful for subsequent finishes (i.e., Pens Plus as a notable case.)

(A note on wet sanding wood. If you intend to use CA as a finish, which in the end would effectively be a resin (or plastic) finish that should be sanded like any other resin, you may not want to use oils. I don't use CA much on my pens (largely due to a severe allergy or toxic reaction to its fumes/dust), however in the cases when I have, I have generally found that saturating the blank with thin CA first, helps minimize the chances of a CA finish separating from the wood down the road. Others have found great luck using oil finishes such as Danish Oil first, before applying CA. So, if you use CA, figure out an effective approach first before wet-sanding wood with oil, and if you choose to use oil first, use one that is effective in combination with CA.)

Sanding Directionality

Alright, now that you have chosen your sandpapers, decided whether to wet or dry sand, and understand the necessity of using every grit, let's talk about sanding direction. It is extremely easy to just sand with the lathe on, however it may not be the most effective solution.

This can be material dependent...resins scratch a bit differently than woods in my experience, and I will usually wet sand through all grits with resins with the lathe on (with some exceptions). With wood, alternating sanding directions tends to give me a better result, perhaps because of the nature of wood, the directionality of its fibers, and the cutting action of the sandpaper.

The general technique is to sand one grit "radially", with the blank spinning (lathe on), then sand the subsequent grit longitudinally with the blank not spinning (lathe off). Longitudinal or length-wise sanding should be done by hand-rotating the blank slowly until you have sanded all the way around. The third grit would be lathe on, fourth lathe off, etc. etc. This alternating process ensures that each subsequent grit is properly cutting ACROSS the scratches left by the prior grit. Remember, each grit cuts down the prior scratch depth by a factor of two. You want to cross-cut the scratches left by each pass. For the first grit, and the last grit, you may find that sanding both ways is most effective. The final grit may also need more sanding to truly polish up the surface in some cases.

If you find that you can see your sanding scratches from a low grit after you have sanded couple of grits higher, then you may need to back up grits (to the grit half that of the scratches you can still see), and sand until you cannot see the deeper scratches anymore. If you need to back up grits, it may be worth sanding both ways.

For wet sanding resins, instead of radial and lengthwise sanding, you may find that using a slower lathe speed at times and using circular sanding patterns can help more effectively cut through the scratches left by a prior grit. If I am having trouble truly smoothing out a particular resin, I may sand radially with the lathe at a higher rpm, then lower the RPM enough that circular motions with my hand actually produce somewhat circular or wavy scratches on the blank, then go back to a higher rpm for the next grit, etc. etc.

Highest Grit

Alright, final technique for sanding. How high of a grit should you sand to? I think there is a lot of opinion on this, so I'll offer my own opinions based on my own experiences. Some people will approach sanding a pen blank, much like they approach sanding other turned items. Sand up to a mid-high grit, like 600, but not beyond, to avoid "closing off" the wood pores and preventing finish from penetrating. Others will sand to the highest grit they possibly can.

In my own experience, I originally started sanding like I'd sand a bowl or a vase...to about 600. At that time (which isn't even a year ago, early summer 2021), I was also starting at lower grits, such as 240, sometimes even 180. I eventually learned I was basically just destroying my blanks by sanding this way, especially with the low grits, but also by not sanding to a high enough grit. Over the last 4-5 months I've learned the value of sanding to the highest grit I possibly can. I sand to at least 2000 with the Norton sandpapers, 12000 with Micro-Mesh, or down to 1 micron with Zona Paper. With resins, I'll take it even farther and use some polishing compounds as well, which can take you as high as 30,000 grit or so (sub-micron).

I highly recommend sanding to the highest grit possible. Regarding wood, I was afraid of doing that originally, because I feared that whole "finish won't be able to penetrate as all the pores will be closed off". With pens, I don't think that really applies. We are working with very thin layers of wood over a brass tube, and so far, it doesn't seem to matter what finish I use, all of them penetrate easily. Oils, friction polishes, pens plus (more than a friction polish), even CA.

In fact, even with very high grit sanding, thin CA seems to go straight into the wood, all the way, without any issue. Oils also seem to penetrate into the wood just fine, and even if you end up finding that they don't penetrate enough, that issue is easy to resolve by wet sanding with oils from lower grits, which will guarantee the oil fully penetrates the wood. With wet sanding, you can easily sand up to 5000 grit or beyond (4 microns or smaller) without any issues with getting the oils to penetrate the wood.

High grits leave you with a very clean, very smooth, and intrinsically shiny (more of a satin sheen naturally except on the hardest of woods and those that have natural oils, i.e., ebony, lignum vitae, etc.) This high base smoothness GREATLY helps in achieving a very smooth, reflective, even glossy surface once you apply your finish. Even with CA, I find I generally prefer to have a very smooth base wood surface before I apply the CA coats, as it seems harder to partially sand through the CA and end up with some of the higher grain showing through. Not to mention the smoothness of the wood seems to reflect light better through the CA as well, which can lead to better chatoyance (although I generally prefer oil to truly bring out the chatoyance of wood!)

One final thought on high-grit sanding. I also find that sanding to higher grits can make it easier to identify trouble areas of your blank. I've turned a number of Bocote blanks, and Bocote being higher in oils, will often have areas of hardened oils in areas of shallow wood grain, or other kinds of mild voids. The effect of these oily areas can be hard to see when the wood is only sanded to say 600 grit, but by 1500-2000 grit, it is a lot easier to see where these oily spots stand out. You can then choose to either expend some additional effort to sand them smooth or choose to keep them for character.

Polishing Technique

Alright, so you've sanded your blanks, and sanded them with more effective techniques. What's next? A lot of the time, you are done, and you simply need to apply your finish. With woods, this will often be the case, unless you use CA as your finish (in which case, you sand again, and may need to polish). With resins, you may find you can still see even the very fine scratches left by Micro-Mesh, Zona Paper, etc. This is where polishing comes into play.

Compounds

Polishing aims to use even higher grit compounds to smooth out the surface of your turned blanks to the point where they shine like glass and exhibit strong, crisp reflections. There are many polishing compounds out there, and in all honesty, I haven't even tried to look them all up or learn them all. I am not yet even sure if the compounds I use are optimal, but they do seem to get the job done.

Don't restrict yourself just to the kinds of polishes you can find at a wood working store or on a wood working supply website. You can also use other kinds of polishing compounds...one I have seen oft-recommended here on IAP is Meguiar's Fine Cut or Ultra Cut Mirror Glaze polish. I have not yet given this a try, as I still have plenty of my last compound, but its next on my list. Another one I have found quite effective on resins, particularly acrylic, is Craftics 20/20 Plastic Polish. I have also tried Hut Ultra-Gloss Plastic Polish, and have had no luck with it whatsoever (sanding to 800 grit doesn't seem even remotely enough, and even after 2000 grit or even 1 micron zona paper sanding, it still did not seem to improve the surface in any way. It may be formulated to work on specific kinds of blanks).

Meguiar's Polish

Craftics Polish

Hut Polish

Polishing On the Lathe

I have generally polished on the lathe. With an RPM around 1500-1800, and either a folded bit of paper towel or soft cloth, you can polish resins or CA quite nicely on the lathe. Technique wise, I find it is best to polish two ways. Radially, with the lathe on, as well as manually with small circular motions with the lathe off or running at a very low RPM (i.e., 100 rpm). You may even want to alternate back and forth between these approaches until you achieve the level of glossy shine you want. If you only polish with the lathe on, you may find that you end up with radial streaks. To make sure you have more random cuts from the polishing grit, I find it is best if my final pass is with those small radial motions with the lathe slow or off. This will ensure that the scratches are random, which can make them much harder to see.

For polishing resins/plastics, that is about all there is too it. If you choose a polishing compound that has multiple grits, you will want to run through each grit serially. If you use a cloth, make sure you choose a cloth that is extremely soft, as it is possible that the material of the cloth itself may leave larger scale scratches that are more visible. Paper towel does not generally seem to do this, however paper towel will usually break up and require replacement, especially with the small circular motions, so it can be a bit harder to use.

Buffing

Buffing is another approach to polishing. Some may consider buffing to be different, but the end result, depending on the compounds used, should be largely the same: a very highly reflective glossy shine. There are again many buffing compounds out there. For resins/plastics, you may have heard of the "blue" compound, which is designed specifically as a plastic polish. To buff, you will need some kind of power tool that can hold a buffing pad, or better yet some kind of buffing wheel system. For pens, you probably want a soft buffing wheel, such as muslin.

Buffing Compounds for Prepping to putting that lustrous shine on your projects.

Tripoli Wax Compound is for preparing surface after final sanding by removing small blemish and scratches.

White Diamond Compound is for smoothing the surface of your project and getting the starting Shine.

Carnauba Compound is for the final lustrous shine.

Blue Acrylic Compound is used for acrylic projects.

Buffing requires its own techniques. A buffing wheel should generally be run at around 1300-1800 rpm, depending on the system used, size of the wheels, etc. At these speeds, there is a notable force applied to the object being buffed, so developing a strong and effective hold on the blank is important... otherwise, it may go flying at rather high speed, right for your lathe bed, floor or workbench, and could crack or shatter.

With an appropriately firm, sound grip, you want to make sure that you angle the blank so that the direction of the wheel does not plow into any hard edges...you generally want the wheel to roll off the bottom (for a forward-rotating buffing wheel) of your blank.

With pen blanks, you shouldn't need much pressure (which might be in contrast to buffing a bowl or vase, which can often be pushed with a decent amount of force into a buffing wheel), you want the wheel to just polish the surface softly. Exact buffing technique may depend on the compound, but generally you will want to keep the blank moving...up and down, rotated, eventually flip it to buff the other half. Buff until the surface shines the way you want it to.

That's It Folks!

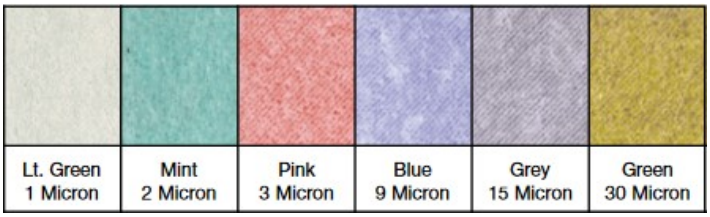
With that, you have it. That is largely all there is to sanding and polishing your pen blanks. Technique is key, especially with sanding. Choosing an appropriate starting grit is often foundational to avoiding scratches that survive all the way up to higher grits. Using every grit in a series is also important to ensuring that you are properly cutting the scratches left by the prior grit by the right amount, as the goal is to eventually converge on a very smooth surface. That requires iteratively cutting down the depth of scratches by half each grit. Polishing and buffing are optional steps, but they can be highly effective steps in getting that perfect glossy, glassy finish.

Grit Comparison Chart

Avg. Grit Size in Microns	CAMI (USA)	FEPA (Europe)	Abrasive Pads
195		P80	
192	80		
156		P100	
127	100		
127		P120	
116	120		
97		P150	
93	150		Light Grey or Green
78	180	P180	Light Grey or Green
65		P220	
60	220		Maroon
58		P240	Maroon
53	240	P280	Maroon
46		P320	Maroon
43	280		Maroon
40		P360	
36	320		Grey
35		P400	Grey
32			Grey

Grit Comparison Chart

Avg. Grit Size in Microns	CAMI (USA)	FEPA (Europe)	Micro-Mesh Regular	Abrasive Pads
30			1500	Grey
25.8		P600		Grey
23	400			Grey
22		P800		
18		P1000		
16	600	P1200		White
15			1800	
14				White
12	800	P1500	2400	White
11				
10.3		P2000		
9	1000		3200	
8.4	1500	P2500	3600	
7.5				
6				
5			4000	
4			6000	
3			8000	
2			12000	



Zona Papers

Micro-Mesh

Additional References

4/0 steel wool = 400 grit sandpaper
3/0 steel wool = 280 grit
2/0 steel wool = 180 grit
2/0 steel wool = 120 grit
1 steel wool = 100 grit
2 steel wool = 60 grit
3 steel wool = 50 grit
4 steel wool = 36 grit

White 3M Scotch-brite = 1200 grit (non-abrasive)
Gray 3M Scotch-brite = about 400 - 600
Maroon 3M Scotch-brite = about 220-280
Green 3M Scotch-brite = about 150 – 180