

Sanding Shortcuts from the Pros

By Steve Sinner

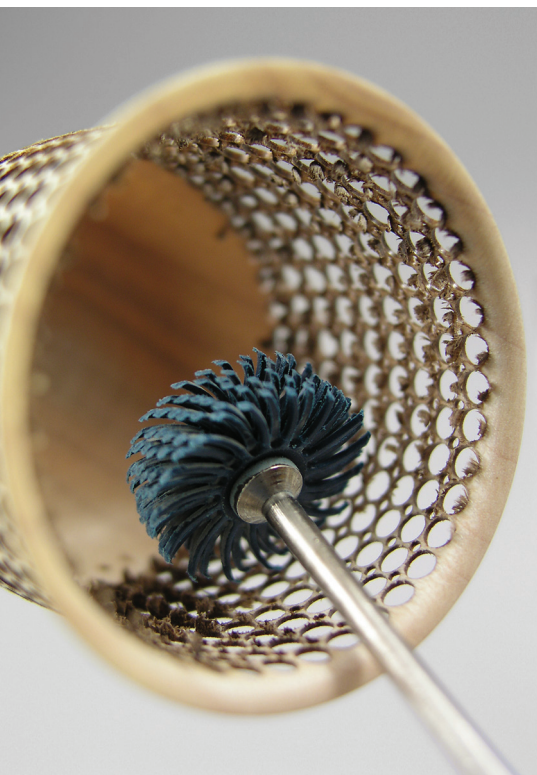


Photo: Steve Sinner

After piercing, Steve Sinner sands his delicate 1½"-diameter goblet inside and out with 3M Bristle Discs.

For most of us who turn, the least fun part is preparing the surface for the finish. Usually that means sanding. But there has been a small revolution in the refinement and use of abrasives. After years of improving substrates (the backing), making abrasive materials that cut faster and last longer, improving grading so the surface has fewer or no irregular scratches, and inventing effective tools to simplify their use, sanding is almost fun.

Along with the revolution in abrasives, we're seeing the continued introduction of new sanding aids. There are now specialized power sanders operated by electricity or air for just about every purpose, from micro to macro. Specialized machines make sense when you do a lot of repetitive work. Several of these machines and devices are aimed at the particular needs of turners.

Testimonials from the professionals

Although many of the newer abrasive products have long been used in industrial applications, they have not been generally available to us. Our suppliers have traditionally given us access to the most common and least expensive abrasives. While there have been exceptions, we were introduced to the world of high-quality abrasives through the promotion of foreign abrasive products and, in some cases, the crossover of products from the auto-body industry and other specialty markets.

Today, U.S. manufacturers are actively soliciting our business, and our suppliers are beginning to offer us a greater range of top-quality abrasives. They are quite a bit more expensive than our old standards, but they are more than worth the price. Testimony to that fact is offered by the following tips from studio artists and professionals, detailing how some of these products are being used.

Binh Pho

3M 900DZ and 268L

Binh's favorite abrasive for sanding his turnings is the 3M 900DZ with adhesive backing. This is a very fast, long-lasting ceramic abrasive. It also has 3M's Xodust coating, which sheds sanding dust "like magic." Binh relies on 2" and 3" discs for his pieces.

Binh is known for the acrylic colors in his work, and when needed, he sands them with 3M's 268L, a micron-graded aluminum oxide resin-bonded abrasive with an adhesive polyester film backing. "Since I'm working with acrylic paint on the surface," Binh says, "the sandpaper with a micron grading works best for me. It cuts down the acrylic paint without clogging up the paper."

Cindy Drozda

Sanding Solution

"I can make a positive recommendation for Bruce Hoover's Sanding Solution. (See The Sanding Glove in **Resources** on page 65.) If you aren't familiar with it, this device is a 'passive sander,' meaning the rotation of the workpiece turns the sanding disc. This means that it is not good for sanding right in the center of a piece where there is not much rotation speed. I have found it really useful for sanding inside hollow forms. Right in the center inside of a hollow form, it is easy to reach with a powered disc.

"Using a hemostat (a form of locking pliers to grip sandpaper) is not only time consuming, but it doesn't do a very good job of smoothing bumps. I have also tried other passive sanders, but couldn't reach around the corners without interference. The Sanding Solution really works!

Glossary of terms

Rich Bohr, a 3M Corporation creative arts account executive, contributed to this glossary of abrasive terms. Rich has attended the last three AAW symposiums and is familiar to many AAW members.

Minerals perform the basic job of cutting.

Emery (generally used for metal polishing) and **garnet** (used in traditional furniture manufacturing) are natural minerals that have long been used as abrasives. Today, they typify the old guard in abrasives technology.

Synthetic minerals have many advantages over natural ones. Synthetics include the common aluminum oxide (hard, tough, and resistant to wear), silicon carbide (very hard, with a brittle nature that allows it to fracture into new sharp edges as it works), alumina zirconia (best for heavy stock removal and high pressure grinding), diamond (precision grinding, lapping, superfinishing), and ceramic aluminum oxide (today's superstar abrasive).

Backings carry the abrasive particles. They include paper (various weights), cloth (various weights), fibers, combinations of paper and cloth, polyester film, and sponge.

Bonds hold the abrasives to the backing. For example, 3M uses an anchoring layer called the "make coat" and another layer over the mineral called the "size coat." Glue or resin may make up both coats, or they may be resin over glue. Other special coatings reduce loading, extend cutting life, or increase cutting efficiency.

Nonwoven pads may be used for a variety of special purposes, and some are good substitutes for steel wool. There are too many other special-purpose abrasive products to cover here, but you may find some of them useful. For example, penturners often use Micro-Mesh products, originally developed primarily for refinishing aircraft windows.

Grade sizes of the abrasive particles as well as the type of particle determines the scratch pattern produced. Sizes generally run from 12 to 2500, although since there is more than one standard for determining grade size, cross reference charts can be useful. Beware, however, that the scratch pattern depends on more than just the grade size, so direct comparisons of sizes of differing grade systems are not necessarily an accurate means of choosing the next-finer abrasive to use on a given project. It is best to test your choice on scrap if you wish to mix abrasives of varying types, grade systems, and brands.

Micron-graded abrasives are more accurately graded than the common types. 60 micron would be roughly equivalent to 220 grit, while .5 micron is about equal to 50,000 grit! If you are plagued by those odd scratches caused by the few oversized particles that may exist on your abrasive, you might wish to try micron-graded abrasives.

Its articulation method makes it possible to position the sanding disc where it can do the work.

"Being able to put different sizes and shapes of disc holders into the device makes it possible to get into the very flat hollow-form shape that I like to do. I bet the Sanding Solution works well on outsides, too, but I haven't tried it for that. It also has numerous configurations for purposes that I haven't tried. We all hate sanding, but most of us

spend a lot of time doing it!"

Cindy has also developed a handout listing the abrasives she has tried and her observations of each, including comparisons. Catch one of her demos for more information.

Stuart Batty

Extend-A-Sand

"Sanding deep and large-diameter bowls is the least fun part of bowl making," Stuart reports. "Bruce



Photo: Steve Simmer

Clockwise, from top left: A 3×½" soft interface foam pad for sanding curved surfaces, a packet of 3M 400-Grit Bristle Discs, a 3" hook-and-loop-backed disc of 3M 260L Finishing Film, 3" and 2" micron-graded hook-and-loop discs from 3M in 60 and 9 microns, a well-used piece of 120-grit 3M 900DZ (still working like new after several weeks of use), a Proxxon Pen Sander like the one used by Art Liestman, all on top of two new sheets of 3M 900DZ.

Hoover's Extend-A-Sand has eased the process by allowing a more controlled and comfortable means of sanding. I brace the drill against my body and have the sanding pad extended out and supported with my other hand. I can control the power-sanding action easier. And, I can finish all the sanding a little quicker on large, open bowls.

"On my deep, narrow bowls, sanding the bottom was done by hand before. However, by adding a small sanding pad to the Extend-A-Sand, I can reach areas that were not possible any other way before.

"If you like sanding, you don't need this extra tool in your kit. But if you are like me and want to reduce sanding time, then I recommend the Extend-A-Sand."

Art Liestman

Various favorite solutions

Art lends several ideas. "I begin sanding with coarser grits using a rotary sander (Milwaukee close-quarter drill fitted with a 2" or 3" Tim Skilton sanding pad). After sanding with 180 grit, I switch to a random orbital sander and repeat 180 grit before moving on to finer grits. The random orbital sander is my most essential piece of equipment.

"My favorite is the electric Metabo Compact random orbit sander. This comes with an 80-mm pad, which is too large to use with conventional 3" Velcro discs. I suggest you replace this with a 3" pad or a 2" pad, making it easier to use off-the-shelf discs.

"I generally use soft interface pads—particularly on finer grits. I have a couple of pneumatic random orbit sanders as well—a palm grip and a pistol grip. I like both of these but would like them more if I had a bigger, quieter compressor.

"The Sanding Glove is a useful tool for me. It allows you to use small pieces of Velcro-backed sandpaper stuck to the glove rather than gripping them with your fingers. This is great for extended hand-sanding sessions. This tool is used only for hand sanding, not with the lathe running.

"Another indispensable tool for me is the Proxxon Pen Sander—a 12-volt tool connected to a transformer. The handpiece is the size of a large pen and comes with several different sanding heads to which you attach adhesive-backed sandpaper. It has a linear sanding motion, moving ¼" per stroke, 8,000 strokes per minute, at 90 degrees to the shaft of the tool. It is great for working up to an edge and is an ideal tool for addressing small problem areas without affecting the surrounding area. It's surprisingly aggressive when used with coarser sandpaper. A very fine little tool! Plus, once you have the transformer, there are lots of other small tools that you can add.

"I've tried several of the new abrasives (Norton 3X, Astradot, and Blueflex micron film paper). They all seem to do a fine job, and I don't yet have a preference for one over the others. I'm still using up a supply of older paper, but someday soon I'll have to adopt one of the new abrasives."

Dixie Biggs

*Pfingst Micro Sander,
3M Radial Bristle Discs*

"I have two favorite sanding aids," Dixie says. "The first is the Pfingst Micro Sander. It is a great little detail sander. I'm able to get into lots of little spaces. Sanding discs can be easily made by using 3M double-sided foam mounting tape and a hole punch. I was able to find various-size paper punches at my local craft store; scrapbooking stores are another good source for larger-size punches.

"My other favorite is the 3M Radial Bristle Discs. I mainly use the 220 and 400 grit. I've found them very useful for sanding my textured carvings. I'm able to sand any fuzzing I might get without removing the detail."

Steve Sinner

*3M Radial Bristle Discs
3M 260L, 3M 900DZ sheets*

"My small goblets are turned to the thickness of my thumbnail (.5mm, or .0197") and then are pierced. Piercing leaves a rough burr on the inside and a lesser one outside. The goblet at this point is very delicate, but the 3M Bristle Discs in 400 grit, mounted on a cordless Dremel, will sand the burrs beautifully without catching and destroying the goblet.

"I use Minwax Helmsman Spar Urethane for most of my vessels. This gloss varnish is built up in layers, and each layer must be sanded before the next is added. To accomplish this, I use 3" 600-grit 3M 260L finishing film hook-and-loop discs, either by hand-sanding or with a random-orbital sander. Its coating sheds the fine dust that is produced and allows sanding the varnish as soon as four hours after application.



Dixie Biggs shows an assortment of 3M Bristle Discs and the flexible shaft tool she uses to drive them. Also shown is the Pfingst Micro Sander, with spare discs in the jars. Note Dixie's dust-collection hood—an essential protection for her respiratory system.

"Binh Pho also likes 3M's 900DZ, but I'd like to add that I buy the 9×11" cloth-backed sheets in 120 and 220 grit. I cut the sheets into 3"-wide strips for sanding my large vessels. 3M claims this material will outlast the average sanding material by three or four times, but I think their claim is way too conservative. I have been using a couple of pieces of this stuff for a long time, and it still cuts faster than any other material I've used."

Andi Wolfe

3M Radial Bristle Discs

Andi is another fan of these discs, and adds some important details. "I use the 3M Bristle Discs for the fine detail polishing of my bowls that are power-carved. Because the surfaces of my bowls are very delicate and full of details that I want to be crisp, I have to be careful about the amount of pressure used during the polishing steps. Also, there is usually not enough room to work sandpaper into the nooks and crannies by



A 3" 3M 260L disc levels and prepares a varnished work for the next coat of Steve Sinner's vessel. The air-powered random-orbit sander is coupled with a ½" soft interface pad for sanding curves.

hand, so I've switched to using the bristle discs mounted on a mandrel placed into my Freedom Micromotor tool.

"The bristle discs come in diameters of ⅙", ¼", 1", 2", 3", and

6". I tend to use the ¾"- and 1"- diameter discs in my work. They are stacked in sets of six on a ⅜" mandrel. The disc bristles are curved, so it is important to follow the directions for mounting them correctly into the mandrel so that the curved tip is the trailing edge for the direction of rotation. There are many different grits available, but the ones I find the most useful are 80 (yellow), 120 (white), and 220 (red). I've used 400-grit discs (blue), but I find that this grit usually leaves a blue residue on the work that is difficult to remove.

"I work the grits in sequence from 80 to 220, alternating them with ceramic-stone polishing. The 220-grit discs produce my final polished surface. I find the bristle discs are very gentle on fragile edges, removing the fuzz left over from the carving steps without fracturing or denting the edge. The discs also leave a beautiful surface that is ready to accept an oil or a spray finish.

"The discs wear down pretty quickly when there are a lot of jagged surfaces to polish but will last longer on gently curved areas. I usually go through a complete set of bristle discs for each of my carved bowls—a small expense overall. I slow the rotation to about 10,000 to 15,000 rpm for polishing and slightly slower for cleaning the edges of detail regions on the turning."

Gerrit Van Ness

3M Polishing Papers

Gerrit Van Ness produces painted sculptures, often using automotive enamels or fiberglass gel coat material. To achieve a high gloss, he first rubs down the painted surface with synthetic steel wool. "The advantage of nylon steel



This sculpture, "You Da Bomb," by Gerrit Van Ness illustrates the high polish he can achieve.

Photo: Gerrit Van Ness

wool over real steel wool is the elimination of small steel particles shedding, and of course, there is no rust," Gerrit notes. "Synthetic steel wool is available in fine, very fine, and ultra fine, the equivalent of #0000."

After the synthetic steel wool, Gerrit uses 9-micron polishing paper (equivalent of 1200-grit sandpaper) and does the final polishing with 2- or 3-micron polishing paper. 3M manufactures the polishing paper, which can be used for finishing plastics, metal, composites, and wood.

He also likes to use liquid acrylic-plastic cleaner with a fine cloth for a final buffing. The boot of "You Da Bomb" is an example of the gloss that can be achieved with these products.

Watch new developments

Watch the journal for ads related to the newer abrasives. Visit the trade show at the Portland symposium. And be sure to watch woodturning demonstrations and ask questions.

We hope this information will help you find happiness in sanding!

Resources

- Craft Supplies USA (800-551-8876, WoodturnersCatalog.com)
- Fire Mountain Gems (800-423-2319, FireMountainGems.com)
- Klingspor's Woodworking Shop (800-228-0000, WoodworkingShop.com)
- Packard Woodworks (800-683-8876, PackardWoodworks.com)
- The Sanding Glove (757-665-4597, TheSandingGlove.com)
- 3M Corporation (for turners, see 3M.com/creativearts)
- Woodcraft Supply (800-225-1153, Woodcraft.com)

Studio turner Steve Sinner (ssinner@mchsi.com) lives in Bettendorf, Iowa. He's a member of the Quad Cities Woodturners and the Chicago Woodturners.