

## *A Note From A Wood Tinker*

To "tinker" is to try to make small improvements to something by making minor changes. So to tinker in wood is perhaps whittling bits of wood away to reveal an object d'art. The word "tinker" came into use in medieval Scotland to denote an itinerant metal worker i.e. a tinsmith who might be a Highland Traveller or a gypsy. In one of the more unflattering definitions, a tinker is "an unskilled mender i.e. a bungler." Let us hope that I am not bungling by looking at another book recently added to our club library, this one on sanding wood.

In a certain sense, sanding is the epitome of making a small improvement since each abrasive grain removes only a tiny bit of wood. Sandor Nagyszalanczy's book *"The Wood Sanding Book: A Guide to Abrasives, Machines, and Methods,"* has 214 pages with black and white photographs and drawings on most pages (The Taunton Press, 1997).

Nagyszalanczy, a furniture designer and custom woodworker, was a senior editor for Fine Woodworking magazine. "The Wood Sanding Book" has four goals:

- provide abrasive facts e.g. types, grit grades, surface coatings, backing materials & treatments.
- teach sanding techniques for shaping, leveling, smoothing, polishing, and removing waste.
- describe sanding tools and machines emphasizing their advantages and drawbacks.
- address common sanding problems.

Nagyszalanczy's 8 chapters:

1. *The Anatomy of Coated Abrasives* - In 35 fact filled pages, Mr. N (I can't keep typing Nagyszalanczy, I will run out of space) attacks his first goal in chapter 1. Sprinkling history into a description of how modern abrasive materials are made, Mr. N: explains the meaning behind the many terms, letters, and numbers found printed on the sandpaper backing; discusses flint, garnet, aluminum oxide, silicon carbide, ceramic, and structured abrasives; describes how friable grits work; provides a grit size chart; and explains the sifting and sorting systems used to grade abrasives and their tolerances. Backing materials including papers, cloths, film, and screens (mesh) are described. An adhesive is needed to attach the abrasive to its backing. Mr. N discusses the two part (make coat and size coat) system for anchoring grit to a backing. Closed coat and open coat coverage is reviewed and Sandor (Is that his real name? ... in a book on sanding?), Sandor is clearly a fan of open coat sandpapers for use on wood. He states:

*The tiny open spaces between grains on a sheet of open-coat sandpaper provides relief for swarf, just as the gullets on a sawblade provide clearance for chips cut by a blade's teeth. In contrast, a closed-coat abrasive is more likely to load and eventually burn and glaze the surface of the abrasive. ...open-coat abrasives are clearly a better choice for most woodworking operations....*

Hide glue, resin bonds, anti-loading treatments such as stearates are described and treatments to the reverse side of the backing paper are explained along with pressure sensitive adhesives (PSAs) and hook and loop fasteners (Velcro™) (used to attach sandpapers to sanding blocks or sanding machine pads), and anti-static treatments (to avoid static shocks and dust "cling"). The advantages and disadvantages of various belt and drum splices are reviewed. There is a brief look at steel wool, nonwoven plastic abrasives such as 3M's Scotchbrite™ pads, foam backed pads, bronze wool, micro-mesh, sanding cords and tapes, and metal backed abrasive plates (Sandplates™).

2. *Shaping, Leveling, and Smoothing Bare Wood* - Nagyszalanczy begins:

*"There are three chores in a woodshop that sandpaper does best: shaping, leveling, and smoothing bare wood.... The information in this chapter will help you select the right sandpaper grits and sanding techniques for the job at hand."*

Shaping wood with 24-80 grit papers without the risk of unwanted splitting that may occur with rapid removal by gouges, planes or drawknives and abrading wood without regard to direction of grain is noted along with the disadvantage of (and necessary precautions for) dust creation.

Mr. N includes many helpful reminders and tips such as:

*"If you plan to use bladed woodworking tools-- chisels and carving tools--or rasps and rifflers to add detail or refine shaped parts, it is very important to clean the surface of the wood thoroughly after abrasive grinding. This is because any grains of grit that remain embedded in the surface (especially in open-pore woods like red oak) will quickly dull and/or nick sharp tool edges...."*

Leveling in three passes, sanding versus scraping, sanding smooth, grit progressions, variations based upon the type of wood and finish, sanding evenly, sanding parts before assembly, protecting joint surfaces, and inspection round out this 22 page chapter.

3. *Sanding to A Great Finish* - In 26 pages, surface evaluation & repair, glue smears and surface contaminants, de-whiskering, four ways to raise grain, knocking down the grain, using a tack cloth, scuff sanding between coats, rubbing out a finish (including choosing the right finish, building a thick enough film, curing, leveling for a matte finish, dry or wet leveling, compounding for a satin finish, polishing and buffing a high gloss finish by hand or powered and removing swirl marks are all covered as well as removing an old finish.
4. *Tips for Handling Sandpaper* - If this were a stew, it would be "Sandor's Hotchpotch". As it is, it is a 25 page hodgepodge of tips ranging from cutting, breaking in, and gluing sandpaper to humidity effects, proper storage of belts, and knowing when to throw it out. Sandor describes cleaning gummed up sandpaper and belts using rubber (neoprene) sticks, using auto supply stores to source sanding supplies, reversing direction and washing gummed up belts, cleaning and storing partially used PSA discs. He offers advice on sanding problems including cross-grain scratches, washboard surfaces and woolly grain as well as power sanding troubles causing swirling, streaking, glazing and burning and discusses preventing veneer sand through.
5. *Hand Sanding* - Making and using flat and curved sanding blocks, sanding planes, sanding bows, and profile (contour) sanding blocks (Sandor describes a way to custom make these using expanding foam sealant). Noting that small parts and details may be sanded with the detail sanders (see also the Tyro Tool Tip for September 2016), he suggests making specialty sanders by cutting and gluing sandpaper to a substrate that fits your need. Use of emery boards and small sandpaper strips are suggested. Another idea is to invert the process and clamp a sanding block or glue it to a fixed surface and abrade the workpiece by rubbing it against the fixed sandpaper.
6. *Power Sanding* - Ten pages are devoted to safety and protection from dust, and in ten more pages Nagyszalanczy emphasizes five power sanding factors: (1) running speed; (2) feed rate; (3) pressure; (4) abrasive selection; and (5) backing pad selection, for example:

(1) Running speed: There is no minimum rpm; the tool will just work slower. Pay attention to the maximum speed rating for a particular tool's safe operation. Exceeding the tool's rpm rating may cause the tool to break or shatter. Shaping and leveling usually hog out wood at a faster rate than the finesse required for areas where little wood is to be removed. Burning indicates too high of a running speed.

(2) Feed rate guidelines: (a) the heavier the cut, the slower the feed rate; (b) the finer the finish, the slower the feed rate *up to a point* (feeding too slow can cause heat build up and scorching). Feeding too fast produces chatter (skipping); too slow- burn marks.

(3) Pressure: excessive pressure causes a variety of ills. In most cases, "the best cut is achieved by bringing the abrasive in light contact with the workpiece...." Distribute the workload to avoid uneven wear.

(4) Abrasive selection: Match the abrasive material and grit size to the task. Mr. N says: **"The biggest mistake that woodworkers make when selecting abrasives for power sanding chores is choosing too fine a grit."** Choose the right backing and belt splice (he offers recommendations). Finally, change sandpaper often.

(5) Backing pad selection: Hard pads are better for flat surfaces. Soft pads are better for contoured surfaces.

7. *Portable Power Sanders* - In 28 pages, he provides an overview of belt, narrow belt, straight line, orbital, detail, and random orbit sanders, right angle grinders, die grinders, drills, Dremel™-type rotary tools, and flexible shaft rotary tools. An overview is also given of the discs, wheels, drums, spindles and rolls used with rotary tools. The chapter ends with a brief look at pneumatic sanders.
8. *Stationary Sanding Machines* - The final chapter (25 pages) reviews edge sanders, benchtop narrow belt sanders, stationary disc sanders, and the belt/disc combos, as well as drum, oscillating spindle and thicknessing sanders, and arbor mounted sanding wheels. Two interesting topics covered by Sandor are his description of a box jig for sanding cubes of wood into balls on a horizontal belt sander and tips on holding small parts safely e.g. using locking pliers, the RGT handler from Klingspor, adhesive transfer tape and a support, and how to make a vacuum handle.

Nagyszalanczy concludes by listing Sources of Supply and an index.

In summary, Nagyszalanczy's book *"The Wood Sanding Book: A Guide to Abrasives, Machines, and Methods"* is a very good reference for basswood beginners like me. It combines fundamental facts of abrasive materials with sanding techniques, an overview of equipment and tips to solve common sanding problems. An expanded edition is needed to include changes in sanding technology and improvements made during the past twenty years, but for now this book appears to be the king of the wood swarf hill on the topic of sanding.

"The Wood Sanding Book" is a new addition to the Mid-Wisconsin Chipper's Club library.

