What you need to know about stabilising wood – part 2

In part 2 of his articles on stabilising wood, **Kurt Hertzog** continues to talk about colouration

In last month's article, we covered some of the fundamentals of stabilising wood. Anything that is soft or has a bit of porosity can be a candidate for stabilisation. The more porosity, the better the candidate. While we are woodturners, don't lose sight of the fact that stabilisation lends itself well to many other woodworking applications. Anything that will see plenty of handling or abuse, mechanical or chemical, can have its life expectancy improved considerably by having the plastic resin impregnated and cured. A few of the non-turning applications that immediately jump to mind are knife scales, cutting boards, table end caps and other high-wear surfaces. There are many more, so you may find opportunities to use stabilisation in your woodturning as well as other woodworking endeavours.

This continuation of the stabilisation topic will cover going beyond the basic single clear impregnation of the smaller blanks to include dyeing applications, multi-colour stabilisation, processing larger pieces, tips, tricks and conclusions. My goal is only to plant the seed with you and get you on the road with the fundamentals. As usual, these are only thought starters, not end points, but beginnings for your expansion.

COLOURING BLANKS

PHOTOGRAPHS BY KURT HERTZOG

Not all woods are good candidates for stabilisation. Porous woods, such as burls, lend themselves to the process

To my mind, there are two simple ways to colour stabilised blanks: either colour before and then stabilise, or stabilise with colours in the resin. There are advantages as well as disadvantages to both. What really drives the decision is your process flow. If you are making a blank that you will process as a raw blank to be turned to finished shape later, you can only really stabilise with colours in the resin. That will allow you to thoroughly impregnate the blank, providing it is porous enough, with a colour. Upon completion, you now can store the blank for future use and turn to completion ▶

with knowledge that you have a colour throughout. The real disadvantage to this method is the limitations for colouration. You can process for a single colour. With a two-step process, you can really use two colours. Beyond two colours, you have some real difficulties. The method is to soak the blank without vacuum in resin appropriately dyed. After the blank has absorbed sufficient colour how you wish, you cure the resin as you would normally. At completion, you have stabilised resin impregnating the blank, but there are still voids that can be filled by pulling vacuum. The next step is just that. Process that cured blank in a resin coloured with your second colour, using a vacuum as you would during the normal stabilisation process. At the point where your bubbles are nearly gone and you've gone through the post-vacuum soak period, if you follow that regimen, you perform the second heat cure. You've now locked both colours into the blank for good and have filled the entire blank with resin.

For surface colouring after turning to near finished, I use either spirit- or water-based dyes. Jacquard works well, as do others

The penetration of surface soaking colours will vary. Gloves will keep the colours from marking your skin for days

The second method of colouring stabilised blanks is to turn to the near finished shape and then colour. The colouring methods now become wide open. You can literally use any colouring method you wish and get as multi-coloured and artistic as you wish. Once you've installed your colourings, you now impregnate that coloured turning with clear resin and stabilise. You can now put those incredibly sharp finishing cuts on your material and it will be able to hold those crisp details. The colouring, because it is usually limited in depth, needs to be handled with caution. Depending on your colouring method and complexity, you can cut right through if you aren't careful. It all depends on how exotic you'd like your colouring scheme to be. The choice is yours. Once you've stabilised and then cut through your colour, you really have limited options. You can't easily get colour into the blank since it has been plasticised as there are no places left for it to soak in. Don't let it scare you; give it a try and just be aware of the depth of penetration.

For the colouring of the resin for through colouring stabilisation, I stick with the manufacturer's recommended dyes

You are now in the artist realm. You can dye, sand back, blend colours or create as you wish. Depth will always be a concern

KEY POINTS ON COLOURING BLANKS

1. For solid colour stabilisation, use the manufacturer's recommended dyes
2. Mix only what is needed since you'll need to store coloured resins separately
3. When in doubt, use more dye than less. For the multicolour stabilisation, practice on the non-vacuum soak time
4. When colouring then clear stabilising, practice with colours beforehand
5. Depth of penetration varies wildly – experiment before big commitments
6. Get to near finished shape before colouring, then you can stabilise and cut

BIGGER WORK

A bigger piece would benefit from stabilisation. Turned to near finished shape and then processed to be frugal with materials

The larger bag from TMI Stick Fast is 510mmm square. It is large enough for the work most of us are involved with

While you can process much bigger pieces, it's better to process only in the size you'll need for best results and costs

If you do bigger work and need that capability, it can easily be done using a vacuum bag. TMI Stick Fast offer a couple of different sizes and you can always use a standard veneering press vacuum bag with proper care. The key is to never stabilise any more than you need to. Not only will the time for absorption and curing be longer, but your work envelope and material costs will be much higher. Get close to where you need to be and then stabilise. Don't cut expensive stabilised wood, only to be in the sweep-up pile. Getting clever with support nesting will help with minimising the amount of resin required to impregnate your wood. Cradle the piece in the bag, put the resin in the centre, seal the bag carefully and slowly vacate the bag. Remember, you can always remove the vacuum and add more resin if needed. Be cautious that you don't pull liquid into your vacuum system. A liquid trap or precise control of resin content will help prevent this from potentially occurring. Vacuum pumps, whether rotary or venturi, dislike resin being ingested. Whether you are processing a near finished bowl, platter or large block, you'll be able to draw the resin to where it is needed provided you maintain sufficient vacuum long enough and don't starve the process of resin. Don't get too crazy, but be certain you have accomplished your goal of desired densification. Remember, as you begin the heat curing process, you are on a one-way trip. Once you've impregnated your turning with resin, wrap in foil for the heat curing process. The foil contains the small amount that will ooze out during the curing and help keep things clean. If you are going to boil your turning based on size or convenience, you need to be certain to seal it well from the water. You'll want to eliminate dilution of the resin while you process. A plastic wrap of bin liners, shopping bags or the like works well enough. Seal up the seams with duct tape and place it into the boiler. Of course you can use an oven large enough to contain it. With an oven, there is no need for the plastic over wrap. I've used our household oven with no detectable odour or after-effects. I did check the temperature control with my digital thermometer to be certain of the accuracy. With the digital controls on the oven, I found it was capable of providing 200°F very stably and reliably when set to around 195°F.

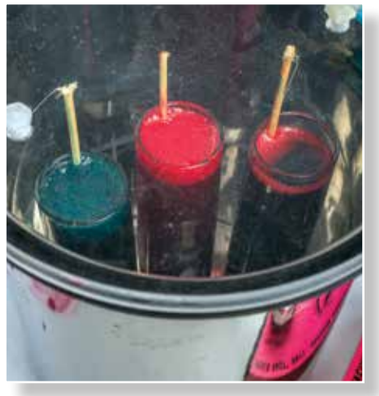
Boxelder *(Acer negundo)* burl cut to size for processing. The stabilisation will toughen it for turning and also help keep the colour from fading

Help yourself with vacuum bagging by creating a cradle to minimise bag filling dimensions. My air line coiled up works nicely

With sufficient resin for absorption, the bag is pulled to full vacuum with care to provide for a liquid trap

TIPS AND TRICKS

Don't catalyse until needed and then mark clearly. Use old stock first for best results



Use smaller containers for dyeing; this will help you to minimise the amount of resin to be coloured

Reclaim your dyed resin. Assorted shaped glasses help with using minimal quantities of dyed resin

Clean up is a soap and water process. Regular dishwashing soap and warm water used promptly cleans well

Slowly introducing the vacuum will minimise foaming and stresses on your vacuum system. Increase to full as needed slowly

You can monitor the process until the bubbling diminishes to almost nothing. Keep sufficient resin for submersion

There are many good suggestions I can offer to help you with the stabilisation process. Like anything, there is a lot of good information available as well as a lot of bad advice. Like they say, the guy at the other end of the wire on the Internet is a wizard. Just ask them and they'll tell you so. That said, be cautious for several reasons.

First, you are dealing with chemicals, heat, vacuum chambers, turning of chemically altered and processed materials and more. Don't find out that you've been led astray by the basement chemist, who offers the very inexpensive perfect solution. There really isn't a free lunch, is there? Deal with reputable dealers and companies who will stand behind their products and provide you with not only quality and safe products, but also with the support you may need to be successful and safe. The best advice I always give is if you don't understand it or have reservations, don't do it until you understand it and have your concerns resolved.

A simple glass will provide sufficient volume for stabilising this stopper blank. This also makes for easier cleanup

Unstabilised blank, lower front, with all others stabilised. Top front, as done, with the rest bandsaw faced to expose results

Taking a beautiful yet fragile blank, on top, and densify it for use is a joy. Underneath, both are ready for detail and long life

My off boil is at 199°F, which is perfect for curing the stabilising resin. A full boil at 212°F. makes for a mindless temperature process

Size isn't a limitation here when processing similar wall thickness items that are individually wrapped, bulk process

Once impregnated with resin and wrapped, there isn't a big hurry to cure. You can fit it into your schedule as fits

You can take any porous wood species and bend it to your desired colorations. Experiment and create something unique

Take your materials to the size and shape you need to minimise the utilisation of materials and time. Because you can literally go from turned, to near finished shape, to fully stabilised in 30 minutes or so depending on your setup, there isn't a huge preparation or waiting time. Processing in batches to fill your tanks helps with the yields per setup and cleanup. Don't worry about the appearance of your finished blanks, unless you are marketing them. The ooze out and flash isn't causing any problems, except appearance. If you need to impress someone with the beauty of the finished blank, you can easily trim one or more of the faces to expose the final result. Of course it is extra time but it may be worth it to you if you are marketing or can't visualise the results from experience.

KEY POINTS TO LARGER WORKS

1. Buy uncatalysed resin if possible for maximum shelf life
2. Store catalysed and uncatalysed resins in a cool dark storage
3. Catalyse as needed and in modest quantities, marking dates
4. Rotate stock as needed to minimise dating loss
5. Recapture and properly store uncured resin as possible
6. Use smaller containers as possible inside vacuum chambers as safe and appropriate
7. Batch process for efficiencies in time and materials utilisation
8. The best improvements are on porous materials

CONCLUSIONS

You now have the ability to make beautiful, yet soft woods appropriate for use in the more delicate and detailed spots

Whether you are stabilising corn cobs for pens, colourising burls or stiffening punky woods, stabilising can expand your horizons

The topic of stabilisation isn't for everyone, but I think it is important enough to feature in the article. You can easily understand it and bring it to bear as you see fit. Gone are the days that it is for pen turners and bottle stop turners. You can now easily take any piece of wood, of nearly any size, turn it to near finished shape and then stabilise it to meet your finishing needs and the long-term durability issues. Since you've been exposed to the vacuum bagging process to impregnate the blanks if needed, your limit is the size of your vacuum bag. Veneering bags are readily available in 4×8ft so you don't have any excuse, do you? The boiling process for curing now even frees you from the toaster and kitchen oven processing. You can boil your pieces being processed inside or outside in anything that you can boil water in. And you have the beauty of simple temperature control. Bring it to a boil and forget it until your time is up.

With the heat conductivity of the water to the blank, your curing times shrink to minimal. Costs can vary, but like bowl coring, don't put all of your waste on the floor. Turn near finished shape, stabilise, then turn to final shape minimising the higher cost resin left in the chips. Lowest stabilising cost and best finishing cuts possible. Put detail and dexterity into woods that could never hold it naturally. What's not to like? Give stabilising a try. ●