Wood ponding

A procedure for treating the raw material for stringed instruments

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Ponding is the term used for treating wood by placing it under water for several months. In the past, this treatment was generally held to result in higher durability, more dimensional stability and better working properties. I have been interested in the various methods of ponding wood since I began building violins 35 years ago. In that time I have experimented with many such methods, including thermal treatments and soaking the wood in salt water, or in horse or sheep urine. About five years ago I came across the method described here, which was developed by the Hamburg-based bridge maker Milo Stamm. I was impressed with the quality, strength and tonal characteristics of his bridges, and he told me that this was the result of the wood treatment used.

In the past four years I have treated around 12 tops and 25 backs using Stamm's wood ponding method. I have carefully recorded the density and speed of sound transfer of each piece, both before and after ponding. In every piece of spruce there has been no change either to its relative density or to the speed of sound. For the maple, however, this treatment has lowered its relative density by an average of 0.02. (That is, if the maple had a relative density of 0.62 before ponding, afterwards the density was lowered to 0.60.) I had hoped that the speed of sound would have been increased by the ponding but in every instance it was the same after ponding as before. All the same, being able to lower the density of maple backs has meant I could use a number of expensive pieces that I had once passed over.

Some of the equipment used in the treatment

Filling the container with distilled water

1 The treatment process requires a container large enough for me to immerse all of the wood that I plan to pond. For cellos I use a large plastic barrel. The container needs to be made of plastic or some other material that will not react chemically with the water and wood. A clean plastic rubbish bin works well.

2 I use distilled water to fill the container, as it contains no minerals that could react with the wood. For violin and viola wood, I use about ten litres of water per wedge. This does not have to be exact but it is better to have too much water per wedge than too little.


Each piece of wood is fully submerged

3 I add the wood, being careful not to wedge the pieces in too tightly. (According to Stamm, the end result will be much the same whether the wood is old or new. My results concur with this.)


A wooden strut is fixed under the lid

4 I keep the wood submerged at all times by fixing a wooden strut under the lid of the barrel. A glass weight on top of the wedges will also work, or a plastic bucket filled with weights. (If stone or metal weights are used in the bucket, I ensure they do not come into contact with the water, because they could cause a reaction.)

I monitor the water level periodically, since it will drop as the wood begins to absorb the water. If I need to, I add water to ensure the wood is always submerged. If the top of the wood is exposed to air for any length of time, the wood will turn black.

5 It will take about a month for the wood to absorb enough water to sink to the bottom by itself. At this point I remove the weight, and then leave the wood for approximately two more months, until it is permeated with water to its core. During this time the water will get quite odorous, with a smell of manure. It helps to have a well-fitting cover.


A well-fitting cover helps contain the bad smell


The wood is fully permeated with water


Drying the wood in an outbuilding takes several weeks

6 I remove the wedges from the water and move them to a spacious outbuilding for the drying period. To dry the wood at a steady, more or less controlled rate, I maintain the space it is in at a humidity level of about 50 per cent. Air needs to circulate freely around all the pieces, so I ensure there is enough space between them, and use thin strips of wood to separate the wood from the surface they are resting on. It may take up to a week for the manure smell to go away fully.

For the first two weeks of drying I shift the wedges every day, making sure that the area where the wet wood is in contact with another surface changes from day to day. After about four or five weeks at 50 per cent, the humidity level can be gradually lowered.


The wood spends several weeks in a drying cabinet

7 Eventually, I put the wood in a drying cabinet at 15 per cent humidity for a few weeks to ensure that the wood is thoroughly dry. I use the same cabinet that I use for drying varnished instruments; the fluorescent bulbs give off enough heat to make the space quite dry. Then I leave all the pieces to sit in my wood loft for a few more months to let them acclimatise to the ambient humidity of my shop. Now the wood is ready to use.


A ponded piece of wood, dried out and ready to made into a violin back

8 I believe the jury is still out regarding any quantifiable tonal improvements using ponded wood. To attempt to achieve a direct comparison between instruments made with ponded and unponded wood, I constructed identical violins using ponded wood for one, and unponded wood for the other. Both of these violins have been periodically compared by many players. Their tone has been judged to be quite similar, and though they have very slight differences, one is not clearly better than the other. Perhaps if more makers use this ponding method, there will be more opportunity for these types of direct comparisons. Then a better understanding of the process, and of the possible benefits, may emerge.

NEXT MONTH
Steve Beckley on repairing a bow head