COMPRESSED WOOD CAN EXPAND YOUR HORIZONS

Kristin LeVier, *Ominousa,* 2012, Compressed maple, acrylics, 4½" × 6" × 6" (11cm × 15cm × 15cm)
Photo: Tib Shaw/AAW

Malcolm Zander

Compressed wood is a unique product with remarkable properties. It comes in a variety of wood species and could add an interesting twist to your woodturning projects. I first saw compressed wood in 2006, when Tania Radda demonstrated its use at the SOFA (sculpture, objects, functional art, and design) exhibition in Chicago. She took strips of dry compressed wood, dipped them in a bucket of cold water for a minute, and then proceeded to wrap them around her finger or twist them into different forms. They did not spring back and retained their form when dry. No steaming, heat, or force required. I thought, "Wow, what amazing stuff!"

Other wood artists have been inspired by Tania's example. Art Liestman used compressed wood for the nose, tail, and legs of his iconic teapots; Pat Matranga for her wonderful shoes; Pat Miller for the handles and bails on his vessels; and Kristin LeVier in her *Ominousa* bowl.

How it works

Compressed wood is made by a patented process, first developed in Denmark. Clean, defect-free hardwood planks are steamed in an autoclave under pressure to increase their plasticity. The boards are then placed in a special machine that compresses them to 75%–85% of their original length, while constraining the sides to their original dimensions. During the process, the wood is altered at the cellular level, its fibers compressed, or bunched up like the center of a ▶

This small form was a prototype for my *Physalis* piece. The bottom half is hemispherical; the top half has six flat faces. When I pass it around in my demonstrations and ask people how it was made, there is a lot of head scratching. Unless they know about compressed wood, they just cannot figure it out. Once I explain, the light bulb goes on and they all say "Ah, yes!" See page 28 to find out how it was made.

Tania Radda, *Last Flight,* 2005, Basswood, compressed maple, automotive paint, 11" × 16" × 15" (28cm × 41cm × 38cm)

Tania Radda has pioneered the use of compressed wood in turned art pieces. For *Last Flight* and *Desert Dweller,* she used a bandsaw to cut the compressed wood into thin sheets or fine rods, then wetted and formed them into tendrils, leaves, legs, and wings. A hair dryer fixed them into permanent position.

Tania Radda, *Desert Dweller,* 2012, Basswood, compressed walnut, pencils, 4" × 4" × 4" (10cm × 10cm × 10cm)

Pat Miller, *Fill Me Glass, Wench!,* 2013, Birch, compressed maple, ebony, 8" × 7½" × 5" (20cm × 19cm × 13cm)

Patricia Matranga, *Brazilian Rainbow,* 2012, Compressed cherry, tulipwood, cork, 8" × 7" × 3" (20cm × 18cm × 8cm)

Art Liestman, *En Garde,* 2007, Bigleaf maple burl, compressed walnut, 6½" × 9" × 3¼" (17cm × 23cm × 8cm)

concertina. This produces a bellows effect on the cell walls. When the wood is removed from the press, it relaxes back to about 90% of its original length but is now flexible and can be bent while wet. The normally rigid cell walls can now slide, or fold over, onto themselves. When dry, the compressed wood is rigid and will retain whatever new shape it has been given.

Compressed wood is most commonly available in ash, red and white oak, cherry, and maple. It is also sometimes available in other temperate hardwood species, including beech, elm, hickory, pecan, black locust, honey locust, sassafras, sycamore, Kentucky coffee, hackberry, red gum, live oak, osage orange, mulberry, persimmon, and walnut. Wood compression does not work on any of the softwoods (coniferous species) or on kiln-dried lumber. The latter has rigid cells, which cannot be plasticized. Most imported woods are kiln dried and therefore not suitable. Tests with ipe and purpleheart have failed (quite spectacularly), placing them on the list of "not bendable," along with all softwoods and exotic hardwoods tested so far.

Maximum dimensions commercially available are 2" × 6" × 8' long (5cm × 15cm × 244cm), and compressed wood can be bent to a radius as small as five times its thickness. The product has many applications, including the making of musical instruments (such as guitar sides), boats, furniture parts, architectural elements, and wood-turned art.

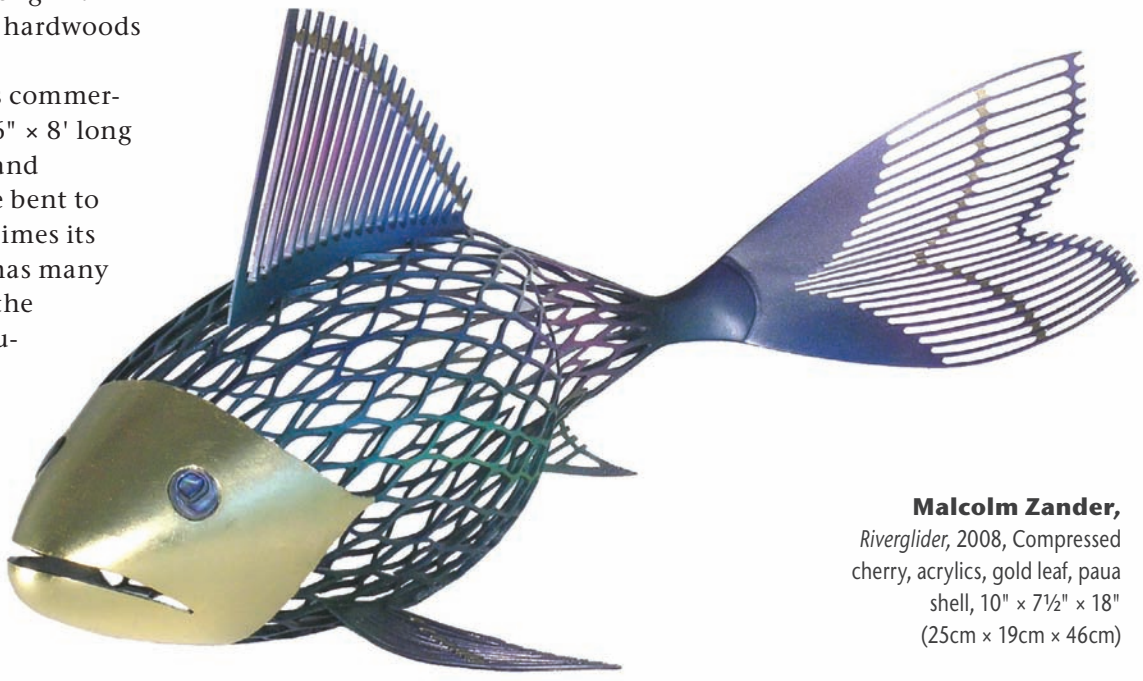
Chris Mroz, of Pure Timber, LLC, a supplier of compressed wood products, with a clock frame of 1.25" (32mm) compressed oak bent with mechanical leverage to a 6" (15cm) radius. Also pictured are snare drums made of bent compressed wood.

Photo: Malcolm Zander

My learning curve

In 2007, I saw an image of a cloisonné fish in a magazine that inspired me to make a similar turned and pierced fish, but I decided I wanted it to have a twist in the body and tail to make it more lifelike. I thought of compressed wood. However, I wanted to use it differently from the way Tania used it—to first turn it and then take advantage of the unique properties to distort the turned piece. Because I wanted stability while I turned it, I had some planks kiln dried for me (compressed wood is normally sold wet).

There were some constraints, as I soon discovered. First, because compressed wood is compressed along, but not across, the grain, it can be bent only along the grain. This meant I would have to turn the fish body in endgrain orientation. Second, because I wanted a large ▸

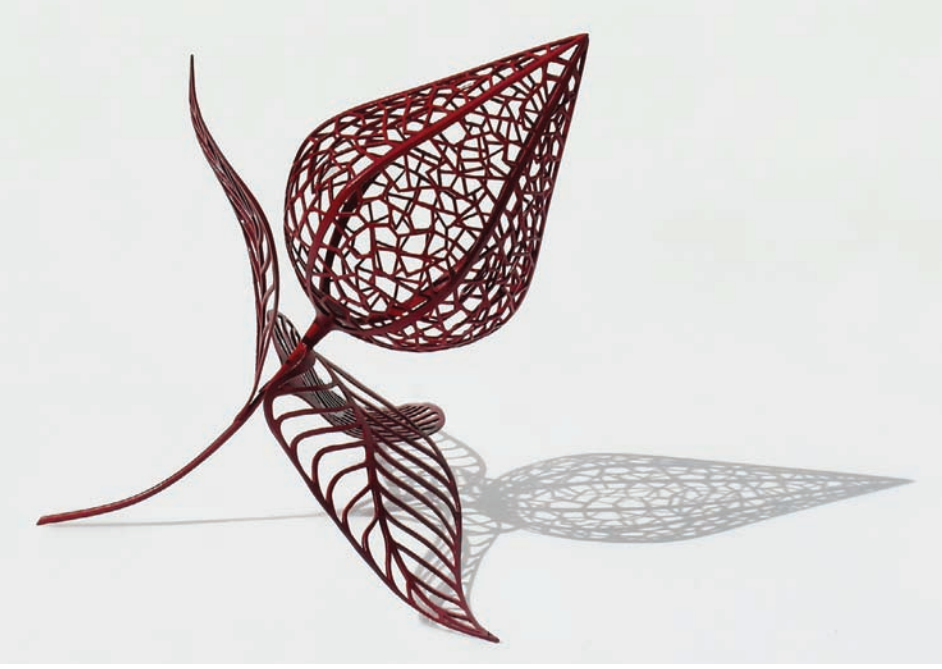


Malcolm Zander, *Riverglider,* 2008, Compressed cherry, acrylics, gold leaf, paua shell, 10" × 7½" × 18" (25cm × 19cm × 46cm)

A Chinese Lantern *(Physalis alkekengi)*, or cape gooseberry seedpod, was the author's inspiration for an intricate project requiring compressed wood.

Photo: R0015041, Wikimedia Commons

A turned parabolic form was cut to give six triangular leaves, which were individually bent, glued together, and then pierced.



Malcolm Zander, *Physalis,* 2009, Compressed cherry, acrylic paint, 7½" × 9½" × 11" (19cm × 24cm × 28cm)

The author's experimental thin-walled endgrain bowl made from three laminated pieces of compressed cherry, then wetted and distorted to an oval shape. Note failure of glue joints due to use of non-waterproof glue.

diameter body (5", or 13cm), I would have to laminate several planks together (it was available only in 1½", or 38mm thicknesses). This does work, but I found out the hard way you had better use a waterproof glue, as seen in the adjacent photo.

The third portion of the learning curve was finding that compressed wood cannot be machine jointed or planed. Those bunched-up fibers catch on the tool edge and cause massive tearout. The planks have to be band-sawn as true as possible, then further trued for glue-up by belt sanding.

My version of the fish, *Riverglider,* was turned endgrain from three laminated pieces of kiln-dried compressed cherry, cut in two with each half then hollowed, rejoined, and pierced. I then wetted and twisted the rear body. I made the pectoral and tail fins from a thin sheet of belt-sanded compressed cherry that I pierced, wrapped around a drinking glass, and fixed in place with a hairdryer.

Shortly after my work on *Riverglider*, I saw an image of a cape gooseberry (*Physalis*) seedpod and immediately thought of making a pierced version in wood. I concluded the only way to do this was with compressed wood. I turned a thin-walled parabolic form from three laminated pieces of compressed cherry, cut out six long triangular leaves, and then wet two of them and folded them inwards so their edges touched. A bead of cyanoacrylate (CA) glue held them in place. The other four petals were folded in and glued in the same way. The piece was then pierced and painted and became the head of *Physalis*.

Next, I decided to make a pierced flower from compressed wood using three concentric forms. The process began similarly to *Physalis*, with each petal individually pierced, filed, wetted, and twisted. The three forms were nested, attached, painted, and a gold-leafed button placed in the center.

I have also used compressed wood to make handles for my two pierced pink ivory teapots because pink ivory wood could not be bent to the tight radius needed. The handles were painted afterwards to match the pink ivory color. These teapots can be viewed at malcolmzander.com/laceseries.html.

Most recently, I wanted to make a silk-like ribbon for a hat I had turned and pierced. I took a long thin strip of compressed cherry and reduced its thickness on a belt sander to about 3⁄64" (1mm). I then bleached the wood several times and sanded again with 120-grit abrasive along and perpendicular to the grain. Then I wetted the strip, wrapped it around a caulking tube, and fixed its shape with a hair dryer. Airbrushing with a pearlescent paint helped me achieve the final result, a fashionable ribbon with a thread count of 120.

Compressed wood is quite expensive, due to the necessarily flawless required starting material and the expensive custom manufacturing machinery, but often only a small amount is needed for the making of unusual pieces. It can be used by wood artists to make bent add-ons to turned pieces, or it can be turned dry on its own and wetted and bent after turning. With compressed wood, you can make pieces that are difficult if not impossible any other way. Give it a try—it is fun to use and there are many possibilities for its use, limited only by your imagination. ■

Special thanks to Chris Mroz for providing valuable information for this article. Chris holds the North American rights to a compressed wood product called Cold Bend™, commercially available through Pure Timber, LLC (puretimber.com).

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Flower involved turning an endgrain lamination of compressed cherry, piercing, filing, and painting.

Malcolm Zander, *Flower,* 2010, Compressed cherry, gold leaf, acrylic paint, 6" × 8" (15cm × 20cm)

Malcolm Zander, ribbon detail from *Black Lace Hat With Crimson Flower,* 2012, Bigleaf maple, madrone burl, compressed cherry, acrylic paints, 8" × 27" × 15½" (20cm × 69cm × 39cm)