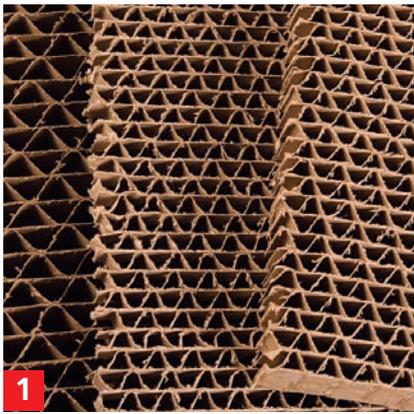


Making a Torsion Box with a Tricel Honeycomb Core

Two or three decades ago, a honeycomb paper product was developed as a core for T-box construction. The paper is formulated with a high rag content; that is, fiber reclaimed from cotton products. The “honeycomb” feature is made somewhat like corrugated cardboard, which, when made in bulk and cut into slices, resembles a honeycomb. The big difference from the honeybees’ endeavor is that the cell size can be varied from as little as 1/4" across to 1 1/2". Also, the paper can be made with different inclusions to give it different properties.

When sliced into controlled thickness, the cut leaves the paper edges quite fuzzy as a result of the cotton fiber content. When glue is rolled onto this surface and a skin applied, the adhesion is remarkably strong.

I have no test data to support my belief that T-boxes made with Tricel are stronger than those made with the cores previously described. However, in a strength-to-weight comparison, Tricel is definitely the winner. Visit www.tricelcorp.com for more information. Resin impregnated honeycomb is available from Vacuum Pressing Systems, www.vacupress.com.



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1. Tricel is made of paper with a high rag content. The fuzzy rag surface makes a strong glue line with the skin.

2. I used 3/4"-thick Tricel, 1/4" skins and 1/2" MDF for the frame. Cut the width frame material to the thickness of the Tricel. To measure it, clamp the skins with light pressure on the Tricel and measure the gap.



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3. Join the core frame with staples top and bottom as previously described. MDF has a tendency to blow out or fracture when stapled. Take extra care to place the staples in the center of the material.



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4. Align and clamp the core frame on the first skin using your fingers as the measuring tools. The skin brings the frame into square. Note that the author has cut his skins so that a bare 1/32" overhang occurs.



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5. Hot-melt glue the 1/4" MDF location block (*photo far left*) into the four corners of each skin.

6. Cut out the Tricel honeycomb core corners to accommodate the location block.



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7. Lay a strong line of glue on the frame. A bit of squeeze-out is not only acceptable, but necessary, to provide confidence that the seam has sufficient glue coverage to bond properly.



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8. Roll glue on the Tricel core. The high rag content in the Tricel provides thousands of fibers that will bond to the skin, but the fibrous material also soaks up glue. Roll out a sufficient amount to transfer.



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9. With sufficient glue on both the frame and the Tricel core, the next step is to close the box. This is no time to be searching your shop for the tools you'll need next. Gather all your supplies before you start.



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10. Because this T-box is narrow, you might think that all you would need to clamp this box together would be the 3/4" cauls, but you would be wrong. Even a box this small requires battens to distribute clamping pressure.

11. Use a tri-square to check that the edges of the T-box are square to the face.



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12. Also check that the end is square to the side. It won't matter to the overall construction if you have to plane a whisker off the core material to achieve squareness.



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13. Any misalignment between skin and core is quickly made flush and square with a few strokes of a plane.



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