On Site With TimberHP

by **NATHAN SHIRAI**

It's been a long time since we've used wood for insulation in the U.S. If you're a remodeler, you may have encountered balsam-wool batts, which were made from borax-treated wood pulp encased in kraft paper and can still be found in some pre-1950s homes. If you're like me, you probably have an "oh no" moment when faced with handling this dusty, messy product.

Now, some 80 years later, the folks at TimberHP (timberhp.com) have brought the manufacturing of wood-fiber insulation back to U.S. soil, but there's no comparison between what this company is making and the old balsam-wool product. The modern products are akin to those developed and trusted in Europe over the last few decades. The manufacturer's product tree has three branches: TimberFill, a loose-fill product released in fall 2023; TimberBatt, released shortly thereafter; and TimberBoard, a rigid board slated for release later this year. TimberHP operates out of a single production facility, a revitalized paper mill located in Maine, but distributes its products nationwide.

As an insulation contractor operating in a southeastern market ruled by fiberglass and spray foam, I was excited to learn about these new products and try them out on the job.

TimberFill

So far, we've had the opportunity to dense-pack with TimberFill on three jobs: a high-performance new build, a garage-conversion project, and a historical renovation that also involved some open-blow.

TimberFill acts a lot like cellulose. It comes packaged in 25-pound cubed bags and can be dense-packed or open-blown. It's nearly identical to cellulose in characteristics such as bag coverage, dense-pack cavity R-value, flame and pest resistance (from borate additives), carbon profile, and hygric buffering (ability to absorb water).

So why pick wood fiber over cellulose? Having worked with both materials, we favor TimberFill and highly encourage it as an alternative whenever a client requests cellulose, because we find it to be more installer friendly without meaningful differences in cost, outcome, or in-place performance.

For our first dense-packing project, we began with a lower material-feed gate setting than we'd use with cellulose, on the advice of the manufacturer. This is because TimberFill's post-manufacturer wood fiber is thicker and chunkier than cellulose's more processed post-consumer fiber, and it tends to lock together more quickly. When you are getting a feel for your production, it's important to start slow and gradually dial up to a higher material flow to avoid hose clogs. While this slowed us down at first, it didn't take long to find the best setting.

TimberFill comes tightly packed and requires a bit of pre-conditioning when being loaded into a smaller electric machine, whose agitator may lack the torque and blade count of a larger PTO (power take-off) driven machine. This prep consists of peeling chunks

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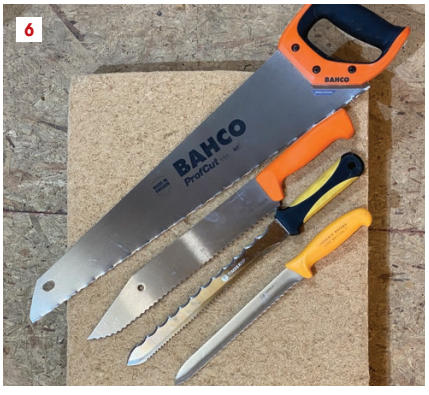
TimberFill. To avoid bulging bays when dense-packing walls, the author "lip-stitches" the membrane on the stud faces to pull it extra tight **(1)**. On a different job, insulated mostly with batts, the crew needed to staple the membrane over odd cavities unsuited to batts **(2)** prior to dense packing them **(3)**.



TimberBatts in a standard-size cavity yield a confident friction fit **(4)** but require precision cutting—cut it any more than ¼ inch wider than its intended cavity and it fights you **(5)**. Serrated cutting tools **(6)** work better than knife blades. The author rigged a 16-inch beam saw on a plywood cutting station **(7)** to rip batts, which sped up the process of fitting batts in I-joist cavities.

out of the bag and breaking them down a bit with a stick, not unlike breaking up ground beef in a pan. For larger machines, most bags can be thrown in whole, but TimberHP advises paying attention to the material and breaking just the harder-packed bags into chunks first.

Once the material's flowing, things get good. We appreciate how pure it is—there's nothing but consistently sized wood fiber in the bag. In contrast, the brand of cellulose sold in our market often contains foreign matter that causes problems; one particularly bad batch had so much junk in it that it broke one of our machines. We had to finish that job by hand-feeding a borrowed machine one fistful at a time, meticulously pulling out and casting aside pieces of plastic bag, strap, and rope. We don't have to worry about such contamination with TimberFill, giving us peace of mind on the job.

Next is the dust. Dense-packing with TimberHP is not dust-free, but it doesn't create much dust, and the chunkier nature of the fiber makes heavier particles, which fall out of the air more quickly than cellulose particles do. In an open-blow scenario, there's more airborne dust, but it still doesn't build up into the impenetrable, blinding cloud that we can get with cellulose. We've also experienced a stinging sensation in the eyes after a few hours of exposure to the adhesive powder contained in the cellulose brand sold in our market, so we always use a full-face respirator with robust filter cartridges when installing it. Even with the fancy respirator, we'll still get that newsprint taste in the mouth after a while. TimberFill doesn't do any of this to us but rather fills the air with the aroma of sawdust as we install it wearing our more comfortable N95 dust masks.

Once in the cavity, the material builds density readily and locks together quickly. The material becomes self-supporting near the same density as cellulose at 3½ pounds per cubic foot. TimberFill feels more forgiving when building density in the corners of the cavity and at the point of hose extraction, common weak spots for new installers with cellulose. Bulging, overly dense cavities can be harder to roll back behind the drywall plane than cellulose, but we mitigate this by "lip-stitching" the membranes over every cavity and paying close attention to fill rate.

There's more airborne dust in an open-blow application, but otherwise installation doesn't differ meaningfully from a cellulose job. If you're used to blowing fiberglass, you will find TimberFill much dustier and slower to install, requiring more of a downward blow trajectory compared with the outward trajectory for fiberglass.

TimberBatt

Our main TimberBatt project was a 1,100-square-foot ADU (accessory dwelling unit) above a detached garage, including a vaulted ceiling, exterior walls, and floor system, plus some interior walls for sound attenuation. The clients were interested in a product with higher performance values than fiberglass, but they also highly prioritized environmental impact and allergen

Insulating Around Electrical Wiring

A mid-depth kerf cut **(A)** is sufficient to fit around an electrical wire crossing a stud bay. Alternatively, the installer can split the batt, fitting one piece behind the wire **(B)** before finishing off with the other piece **(C)**.

Electrical boxes are easily hogged out by notching the negative space out of the batt **(D)** and slicing the cutout to depth to slip behind the box **(E)** before inserting the rest of the batt around it, leaving behind only a box-sized piece of scrap **(F)**.

The integrity of the fibers in TimberBatts allows for a high degree of precision sculpting. In this case, the author's crew cut a channel for a flat-framed 2x4 **(G, H)**. This bay also had a cross wire that required an additional kerf cut. With all the carving, the batt still held together well when fit into place **(I)**.

The resilience and consistency of TimberBatts allow you to sculpt them around the curves and angles of pipes **(9, 10)** with satisfying precision. The integrity of the fibers affords a high degree of precision fitting into odd-shaped framing cavities, such as this ceiling bay **(11)**, but all this artistry comes at the cost of time.

friendliness. They were excited to select TimberBatt when we told them about its thermal resistance, negative carbon profile, flame and pest resistance (owing to its nontoxic borate additive), and relatively benign polyolefin-based binding agent. We were also secretly pining to try it out.

In our jurisdiction, located on the edge of climate zones 3 and 4, building departments require R-38 in ceilings, R-19 in floor systems, and a full cavity in exterior walls. For this project, TimberHP's R-22 TimberBatt, at 5½ inches thick, was the only product we ordered for the thermal envelope. A single layer met the requirement for the floor system and exterior walls, and a double layer in the vaulted ceiling gave us compliance there (combining the R-22 batt with TimberHP's other thermal batt, an R-14 at 3½ inches thick, would have left us just short).

We used roughly 3,600 square feet of material to insulate all these surfaces. At only 20 square feet of coverage per bag in the R-22 format, this amounted to about 15 pallets drop-shipped to the site and unloaded using the general contractor's rented telehandler. By contrast, the same amount of fiberglass would have fit into our single-axle 12-foot box truck with room to spare, while mineral fiber might have taken two loads in that truck. The three-bay garage space under the ADU proved to be a critically important staging area, allowing the material to stay in the dry without obstructing the working area above.

This brings up the biggest practical difference separating TimberBatt from other materials: It is the least compressible batt we've ever used (even after TimberHP reformulated it to make it squishier than the first iteration). This characteristic touches on staging space, material handling, cutting, and installation.

Pulling that first batt off the stack gives a seasoned insulator a fresh feeling. It's firm and consistent, conveying stability. Once handled, cut, and installed, it felt friendlier to the body than other materials do. Being wood, the airborne fibers generated during work feel more like sawdust and don't work their way into the skin like fiberglass or mineral fibers do. The way the dust drops out of the air and smells of pine makes the working environment feel healthier than with fiberglass (one should still wear a dust mask, though).

Inserting the batt into a clear cavity framed on a good layout is a smooth, satisfying experience yielding a confident friction fit. Slightly narrow or wide cavities present a challenge. A more compressible product yields more forgiveness for how oversized a batt can be when we're balancing ease of installation against friction fit. TimberBatt demands to be cut precisely straight and square and no more than ⅛ to ¼ inch wider than its intended cavity—any wider and it fights you. Cutting and notching the material around electrical and plumbing obstructions is familiar to those accustomed to mineral-fiber insulation, but if your background is fiberglass, you may find it slow and tedious. Sawing with a serrated knife is required, as opposed to slicing with a straight blade as you would with fiberglass—and tolerances are tighter.

Wires are easy enough to let into the back of the batt with a mid-depth kerf cut. Electrical boxes are easily hogged out by notching the negative space out of the batt and slicing the cutout to depth to slip behind the box before inserting the rest of the batt around it.

Using up scraps for the narrow insulation pieces adjacent to the top and bottom chords of I-joists, the crew production-cut the three-piece inserts along the band joist area of the floor **(12)**. The author opted to establish the thermal boundary in the lower part of the floor **(13)** to avoid the large number of electrical and plumbing obstructions in the upper half of much of the floor diaphragm **(14)**.

The material's resilience and consistency allow you to sculpt it around the curves and angles of pipes with all the grace of Michaelangelo much more readily than a softer material would, but such artistry comes at the cost of time. Subtracting the right amount of material front-to-back is critical, as leaving too much in the cavity results in a bulge that can overcome the stiffness of the drywall and leave a wave in the wall. There's almost no forgiveness here. If the insulation doesn't lay flat over mid-cavity obstructions naturally, it will not be persuaded with pressure.

We were glad to have a variety of knives for different uses. A Bahco stone wool saw was best for long, straight rip cuts and crosscuts, with a Hultafors insulation knife running a close second. TimberHP's private-label serrated knife was best for the detail cuts around electrical and plumbing. A Mora stone-wool knife, my personal favorite for mineral fiber, did not perform well with TimberBatt.

The vaulted ceiling and the floor system both required hundreds of production rips. The structural vault rafters were furred down to deepen the cavity using ¾-inch-thick subfloor scrap as gussets in the first and last 4 feet of each run, requiring us to subtract about 1 inch from the batts' 15-inch width—a challenging hand cut with a knife. The floor system was framed with TJIs on 12-inch centers, creating an average cavity width of 11½ inches. To maximize efficiency with all these repetitive rips, I let the shoe of a 16-inch beam saw into a piece of ¾-inch plywood, mounted it upside down on sawhorses, and put a receptacle and switch between it and the power source, creating a makeshift jumbo table saw able to slice the batts' entire 5½-inch thickness in a single pass. With scrap 2-by material and clamps acting as a fence, we could make perfect rip cuts quickly—a great relief to production time and forearms.

The I-joist profile gave us an opportunity to use up scrap cutoffs as vertical insulation along the floor system perimeter. We had dozens of slices whose width matched the height of the joist chords, and others that matched the height of the web. Production crosscuts of these slices made pieces we could quickly insert into the ends of each joist bay, reducing waste and bringing the thermal layer down to the bottom of the floor system, which is where we elected to run the floor insulation to avoid numerous electrical and plumbing obstructions in the upper half of the floor diaphragm.

A handful of cavities were inaccessible for this stiff batt product, such as rafter and floor cavities mostly above wall plates and only open from below by a few inches. We had to dense-pack those cavities, which is important to note for anyone considering using TimberBatt who may not have access to insulation blowing equipment—and no, the rental equipment available at the box stores is not sufficient for dense-packing.

At the end of the project, the payoff is an extremely pleasing sight of matte khaki-toned insulation perfectly flush to framing edges, warmly hugging the objects sharing space in the cavity. Embracing the stiffness of TimberBatt is key to success—use it as your ally in achieving an incredible-looking Grade 1 job, and you'll see how the TimberHP products deserve strong consideration for a premium, high-performance insulation package.

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