Prepping for Tile

Lightweight foam board, synthetic membranes, and mortar are all you need for a watertight tile shower

BY TOM BOUCHER

I've been a tile contractor in Maine for 27 years. I've tiled a lot of showers and baths using cement backerboard, and I've set a lot of shower floors in mortar beds. About 10 years ago, I switched to using waterproofing components from Schluter Systems. Initially, I installed the Kerdi waterproofing membrane over cement backerboard and underlayment. Then Schluter introduced Ditra floor underlayment and the Kerdi Shower System. More recently, Schluter has introduced Kerdi-Board tile backerboard, and accessory components like linear drains and recessed wall shelves.

When Kerdi-Board first came out, I was tiling two bathrooms on the third floor of a house. I finished the first bathroom using cement backerboard, and then I did the second one with Kerdi-Board. I've never looked back. I'll never carry another piece of cement board up a flight of stairs. With this lightweight system, guys like me will be able to set tile into our 80s.

Here's how I prepped a whole bathroom for tile using this system last summer, including shower walls, a shower curb, the bathroom floor, a linear drain, and a pair of recessed shelves.

Photos by Ted Cushman

The author cuts 1/2-inch-thick pieces of Kerdi-Board to size using a utility knife **(1)**, then fastens the board to the shower wall framing using screws and special toothed washers **(2)**. He applies unmodified mortar to the joints using the 1/8-inch notched Kerdi trowel **(3)**, then presses Kerdi-Band membrane into the mortar to waterproof the joints **(4)**. He will also apply mortar and Kerdi-Band to the washers and screws used to attach the Kerdi-Board in the field.

SHOWER WALLS

Kerdi-Board is pretty flexible, and it will conform to the framing. So before I start screwing Kerdi-Board to the shower walls, I always check the wall framing to see if it's good and flat. If I find any high studs, I plane them down with a power planer to flatten the wall. Any low spots are easier to deal with while I'm tiling the wall later, just by adding a little thickness of mortar and screeding it flat.

Kerdi-Board cuts easily with a utility knife, and it's marked with a grid of lines at one-centimeter spacing that make it very easy to measure and mark. Every 10 centimeters, which is almost exactly 4 inches, is a darker line, which makes it easy to locate 16-inch on-center spacing—this comes in handy for hitting wall studs with screws.

I fasten the Kerdi-Board to the wall studs with 1 5/8-inch galvanized screws, using special washers. The washers have teeth that poke through the face of the board, so you can place as many washers as you like before you start to drive screws. At joints between two boards, the washers span over the crack and catch two boards, so you need only one screw at the seam.

Once the board is attached, we waterproof the assembly by covering the seams and the screws with Kerdi-Band membrane. I mix up a batch of unmodified mortar and trowel it into the face of the board—as always, grinding a thin coat hard into the face of the board before going back to apply the correct thickness using the 1/8-inch notched trowel.

I use a thinner, looser mortar mix for applying Kerdi-Band than I would for setting tile because I want to be able to squeeze it out readily when I press the Kerdi-Band down. For pressing the Kerdi-Band into the mortar, I use a 6-inch drywall knife. I've ground down the sharp corners on this knife because the last thing I want to do is rip the membrane while I'm smoothing it.

The author cuts Ditra floor membrane with a utility knife **(5)**; combs out a measured amount of mortar using a trowel with 1/4-inch notches **(6)**; lays a sheet of Ditra into the fresh mortar **(7)**; and applies a strip of Kerdi membrane to the joint between two sheets **(8)**. Modified mortar prepared using an acrylic latex admixture bonds the Ditra to the Advantech subfloor, but unmodified mortar is used to adhere the strips of Kerdi membrane to the Ditra.

BATHROOM FLOOR

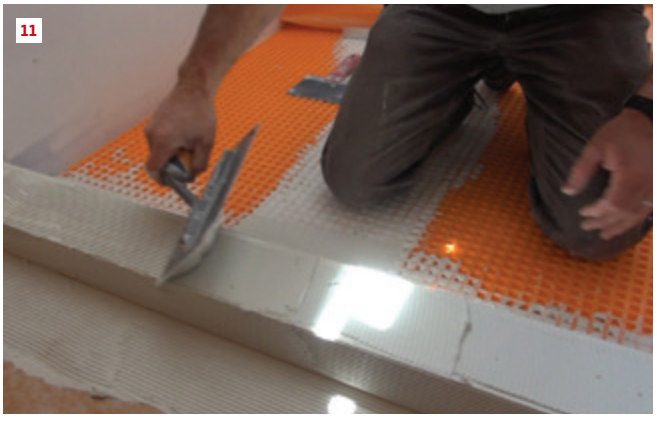
Ditra floor underlayment is an uncoupling membrane. The membrane is mortared to the subflooring, and the tile is then mortared to the membrane. The pockets in the membrane lock the mortar in, but the corrugated material itself is pliable enough that any expansion or contraction of the subflooring won't be transmitted through and crack the tile. As good as this system is, you still need a strong, stable subflooring—it has to be plywood or OSB. Sawn-lumber floors are too unstable for tile, even with the decoupling material in between. (I also use Ditra for tile over concrete floors.)

Before I apply mortar, I clean the subfloor with water and a scrubbing sponge. Dirt or fine drywall dust would interfere with the bond between the mortar and the subfloor. Sponging the floor with water also hydrates the wood, so it won't suck water out of the mortar too quickly and prevent a good, strong cure.

Then I mix up a batch of mortar, using an acrylic latex admixture instead of water. The admixture keeps the mortar from drying out into the subfloor before it can set up and cure, ensuring a better bond. I apply a thin layer of mortar to the subfloor, pushing down with the flat edge of the trowel to work the mortar into the plywood. Then I apply more mortar to the floor, using an appropriate notched trowel to apply a measured amount. You need to hold the trowel at a steep angle—too shallow, and your mortar coverage will be too thin.

The underside of the Ditra is covered with a fine fleece mesh. After I lay the membrane into the fresh mortar, I go over the floor with a concrete finishing trowel, pressing down hard to work the mortar into the fleece and create a mechanical bond.

Once the sheets of Ditra are set, I apply mortar to any joints between the sheets with a 1/8-inch trowel, and seal the joints with Kerdi-Band membrane. For this, we use unmodified mortar—the modified mortar would take too long to set up between the impervious layers of Ditra and Kerdi-Band.



The author cuts two pieces of 2-inch-thick Kerdi-Board to length **(9)** before bonding them together with unmodified mortar to make his shower curb. He applies a measured amount of modified mortar to the subfloor **(10)**, combing it out with a 1/4-inch notched trowel. After pressing the curb into the mortar and allowing the bond to cure overnight, he applies unmodified mortar to the curb using a Kerdi trowel with 1/8-inch notches **(11)**, then presses Kerdi membrane into the curb **(12)**.

SHOWER CURB

Kerdi-Board is an impervious extruded polystyrene (XPS) foam sheet faced with waterproof polyethylene. It comes in eight different thicknesses, from 3/16 inch up to 2 inches. Using the thicker material, we can construct anything from shower curbs like this one to stem walls or even shower benches.

In this case, I was making a curb for the shower, which would later get a sloped floor pan and a linear drain. I started by ripping two pieces of 2-inch material to 4 inches wide, beveling the edges slightly so that my curb would drain after we capped it with marble. Next, I troweled unmodified mortar onto the faces of the pieces. As always, I worked the mortar into the faces with hard pressure before applying a measured amount of mortar using the 1/4-inch notched trowel. Finally, I set the two halves of the curb together and applied pressure. I set the piece aside to cure overnight.

The next day, I troweled modified mortar onto the subfloor and set the curb on edge at the shower opening, pressing it firmly into place. The whole process of building the curb, aside from waiting for the mortar to set, took only a few minutes.

Later, after the shower pan was installed, I waterproofed the assembly. I applied unmodified mortar using the 1/8-inch notched trowel, then cut a piece of Kerdi membrane to size and laid it over the curb, overlapping the joints between the curb and the adjacent floor underlayment and shower pan. I pressed the Kerdi into the mortar, pressing until I could no longer see the grooves made by the notched trowel, to ensure a good bond.

This curb is made with lightweight material, but don't think it isn't strong. I recently did a job where the homeowner came by for a visit after we had tiled the shower—and decided that the shower was too small. So the builder had one of his laborers tear our work apart. You would not believe the time he had getting that shower curb out, once we had it mortared in. He was not having fun.

The author attaches a PVC pipe fitting to the Kerdi-Drain linear drain using a FernCo coupling **(13)**, then test-fits the drain to the pipe stubbed up under the floor **(14)**. Next he applies modified mortar to the Advantech subflooring **(15)** and sets a polyethylene foam support into the fresh mortar **(16)**. This piece will supply firm support to the linear drain and bring the drain flush with the sloped Kerdi-Board shower floor pan.

SHOWER PAN AND DRAIN

Recently, Schluter introduced a linear drain component, Kerdi-Line, along with a sloped shower-pan component made of polystyrene and faced with integrated Kerdi waterproofing. This makes it easy to install a linear drain, which many customers prefer.

With this system, the shower floor is one sloping plane (as opposed to a floor with a center drain, which has four planes that intersect). This means we can use larger tiles on the floor, so it gives us more freedom in tile design. In this bathroom, I used 9-inch-by-18-inch tile for the shower walls, and I was able to use the same size tile on the shower floor. If you have a center drain, you can't use such big tiles—the biggest floor tile you can get away with is about 3 inches square. Any larger, and the floor will have tile corners sticking up at the intersection of the floor planes.

This particular shower job had a few wrinkles. As a rule, it's best if the plumbers on the job leave the roughed-in shower drain pipe dry-fit in the P-trap under the floor, but not glued in place. That way, all we have to do is pull out the piece of pipe, attach it to our linear drain with a rubber FernCo fitting, put some PVC cement on the end of the pipe, and stick it back into the P-trap.

But the plumbers on this job had never worked with us before, and they glued the stubbed-up pipe into the P-trap. We had to cut the pipe to length in place, attach a coupling to our linear drain, and then glue the coupling to the drain pipe. That slowed us down a bit.

Generally I like to test-fit all the plumbing elements first, before I apply any mortar to the floor. Then I mix up a batch of modified mortar, work a thin coat of it into the floor as always, and apply a measured amount of mortar using the standard ¼-inch notched trowel.

Next I place the foam drain support that Schluter supplies with

The author sets the tapered Kerdi-Board shower pan into the freshly applied latex-modified mortar **(17)**, then trims the corners of the linear drain's pre-applied Kerdi membrane **(18)**. He trowels unmodified mortar onto the waterproof facing of the pan **(19)**. After applying PVC cement to the linear drain's collar and setting the drain in place, he presses the drain's pre-applied membrane into the fresh mortar, then covers the cut corners with preformed Kerdi corner pieces **(20)**.

the linear drain. This piece is firm, but flexible. It cushions and supports the drain.

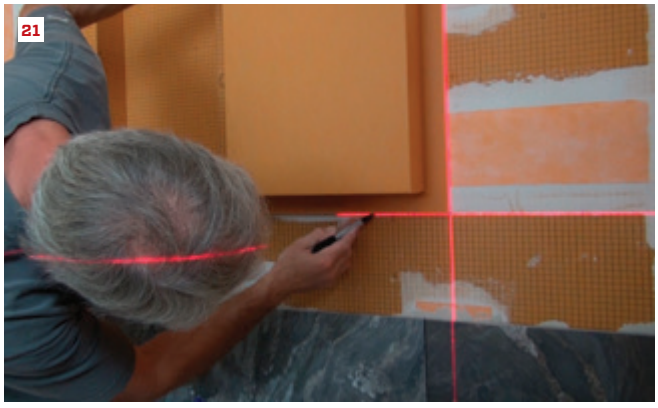
I had previously cut the tapered Kerdi shower pan to size for the shower floor. The thin end rests against the drain support, and the thick end abuts the far wall of the shower, away from the drain. I like to set the pan into the mortar, put a piece of cardboard over it for protection, and then walk around on it to work it into the mortar. Usually, I pull it up again to make sure there's good mortar coverage, add mortar if needed, then set it back in place.

The Kerdi-Drain comes with integrated waterproofing Kerdi membrane already attached. To install the drain, I first apply mortar to the support and the shower floor pan, then put PVC cement on the plumbing pipes, set the drain in place, and hold it for 30 seconds while the glue sets up. Then I work the waterproofing membrane of the drain assembly into the fresh mortar.

Schluter has recently started supplying the drain supports with several pre-applied strips of double-faced tape. I'm careful to avoid the tape when I apply mortar to the support. When I press the linear drain down onto the support, the tape helps hold the assembly together while the glue and mortar set.

Instead of folding the bonded flange membrane into the corners of the shower, I cut out the excess material. That way, the corners won't end up with multiple layers of membrane that would cause the tile to stick up. Schluter supplies preformed Kerdi-membrane inside corners, which I use to cover the corner cuts in the drain membrane. I install those the same way I apply Kerdi-Band at floor or wall joints: I apply unmodified mortar with the ⅛-inch trowel, press the membrane into the mortar, and apply pressure to smooth down the trowel grooves and ridges and ensure good contact.

Whenever I overlap Kerdi waterproofing elements in this way, I follow Schluter's instructions and create at least a 2-inch overlap. That's enough to ensure a watertight joint.



Guided by a laser level, the author traces the outline of a preformed recessed shelf box on the already waterproofed wall **(21)**, then cuts out a section of Kerdi-Board and removes it **(22)**. After setting two boxes into two adjacent stud cavities, he fastens the boxes in place with screws and washers **(23)**. He applies mortar over the joints between the boxes and the wall, then presses a large sheet of Kerdi membrane into the mortar before cutting out the box openings with a knife **(24)**.

RECESSED SHELF

In the past, when we made recess boxes for shower shelves, we had to frame in a box between the studs with 2x4 lumber, then cut pieces of cement backerboard and screw them to the framing to build the box. It was dusty and time-consuming labor. Even the layout took longer.

Now, we have preformed, prewaterproofed boxes in standard sizes that fit into a typical stud bay. And if for some reason we want a different-size box, it's not hard to cut a piece out of a box and reconnect the rest of it using Kerdi-Fix adhesive caulk. You could also build a bigger box out of two of these boxes if you wanted. But in most cases, a standard size works.

To install the box, I lay it face down against the wall that I've already covered with Kerdi-Board, trace its outline, and cut out the board along the traced line. Then I flip the box around and place it between the studs. I screw the box in place using the same screws and washers I use for attaching Kerdi-Board for walls. Then I waterproof the joints by cutting one big piece of Kerdi membrane and mortaring it over the whole box opening. I cut the membrane out where it's covering the box opening, and the box is ready to go. (I like to cut the membrane out as soon as I apply it, because it's easier on my knife than cutting along that line a day or two later when the mortar is hard.)

The boxes come with Kerdi shelves that you can attach at midheight, or wherever you want, and then finish with tile. But I usually install a glass shelf, supported by the tiles inside the recess.

Installing the box this way is quick, clean, and easy. And the nice thing is, if the customer comes along to look at it and would like the location, size, or height changed, that's also simple to do.

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