

# Soft Brick Repair

by Larry Weathers

I began thinking about how to do a quick patch on soft brick after I recently bought a used electric kiln. Although it was in great condition, it did have a cracked soft brick. It looked as if a careless hand had rested on top and broke the top rib of brick just above the top element. The prior owner had tried unsuccessfully to fix this by gluing it with kiln cement, so it was clear that kiln patch was not going to work. In examining his patch, it was apparent that the kiln cement bonded well to the brick but had little tensile strength. This meant I could use kiln cement as an adhesive, but I had to increase the strength of the patch across the crack.

Given that I had some high-temperature ceramic fiber, I decided to make a patch material by soaking the fiber in the kiln cement, which would provide the tensile strength that the cement alone lacked. This type of patch has held up well after multiple glaze and bisque firings.

## Prepping the Brick

Remove the broken brick from the kiln, then carve a shallow trough about a ½ inch on either side of the break with an X-Acto knife or box cutter (*figure 1*). This provides a recess to put the patching material into and provides a large bonding area. This is a very gentle operation. If you're not careful, you can break or crack the broken brick into even smaller pieces. It's easier to do this if you clamp the brick into place before you do the cutting. Use a C-clamp and a couple of thin pieces of wood or corrugated cardboard and a couple of rubber bands to hold the parts together. You should put the supports on both the inside and outside of the brick to distribute the pressure. You want the clamp to be just tight enough to hold the broken pieces in place and no tighter. You can easily crush or damage the surface of the soft brick with a C-clamp.

## Coating and Filling the Break

The second step is to pour very thin kiln cement/patch into the crack. It should be at least as thin as skim milk so that it soaks deeply into the brick. It's better to be on the thin side than too thick—being too thin won't hurt anything. You'll just have to pour it in more times. Keep pouring small amounts into the crack and wait for it to thicken. Continue to pour the kiln cement until the pores of the crack are filled (*figure 2*).

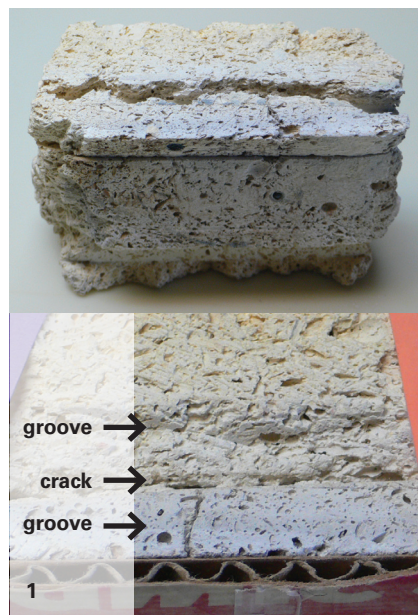
## Filling the Break

Cut a little strip of ceramic fiber (shown at the bottom of *figure 2*) to be soaked in kiln cement—this will finish filling the break. When soaked in kiln cement, the fiber compresses a great deal so use more than you think you'll need. It's better to err on the side of too much than too little. It's easy to pinch off excess after you have filled the grooves.

The third step is to fill the carved grooves with the kiln-cement-soaked ceramic fiber. In a small cup, saturate the ceramic fiber with kiln cement mixed to a heavy-cream consistency. Gently press this soggy mass into the grooves so it's even with the top of the brick and all of the air bubbles are worked out (*figure 3*). If you put too much soggy fiber into the grooves, pinch off little bits until it's level with the rest of the brick. Let it dry thoroughly before replacing it the kiln. The kiln cement patch stays very well bonded onto the soft brick and has no propensity to flake off. I've fired my kiln numerous times with the original patch and there's no sign of flaking or chipping.

**Caution:** Always wear a dust mask and gloves when working with ceramic fiber and soft bricks.

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Remove the broken brick, then carve a shallow groove on either side of the break.



Pour very thin kiln cement/patch into the cracks until the pours are filled.



Press the soaked fiber into the groove until it's even with the top of the brick.