

Tiling a Tub Surround

Substituting backer board for the traditional mortar bed makes the job easier without sacrificing durability

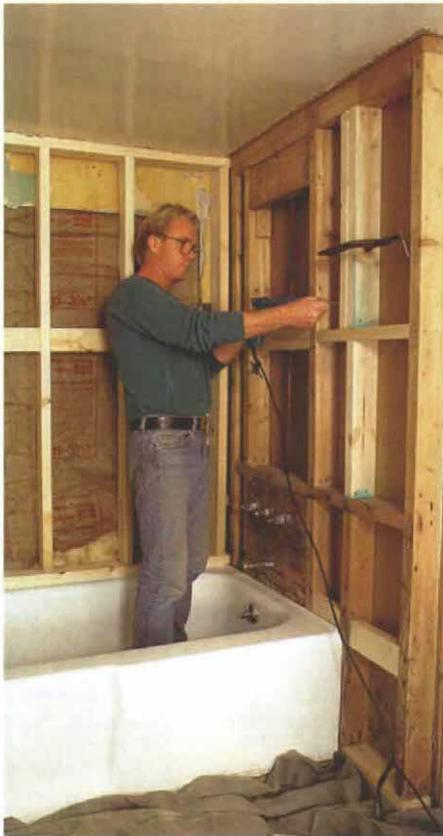
by Michael Byrne

When it comes to low cost and ease of installation, it's hard to beat the fiberglass tub-and-shower unit. It's simply slid into its berth and nailed through the flanges to the framing. When the job is done, everyone gets to bathe and shower in a synthetic shell.

I prefer standard tubs enclosed by tiled walls. Tile is not only peerless in beauty and durability, but it also can be installed with minimal expertise. Whereas tub surrounds once were tiled over skillfully prepared beds of mortar, most tile pros now favor the thin-bed method. It substitutes various prefabricated backer boards for the mortar bed, saving time and trouble

without compromising durability. In this article I'll explain how to tile a basic tub surround using the thin-bed method. The job shown is a remodel, but the principles apply to new work. To satisfy the design of the room, I did two different edge treatments, one of which mimics the look of a traditional mortar-bed surround.

Michael Byrne is technical director of Ceramic Tile Associates in Grand Isle, Vermont. He currently is working on an updated version of his book Setting Ceramic Tile (Taunton Press). Photos by Kevin Ireton.



Start with a solid frame. Backer board should be affixed to a sturdy and accurately framed wall that includes studs and blocking for the backer-board seams and for the tub enclosure (above).

Put a membrane under the backer board. The author laps bands of 15-lb. roofing felt, stapled shingle-style to the studs, to keep moisture out of the wall (right). At vertical seams, he caulks the laps with asphalt to prevent leakage.



Framing and waterproofing—Bathtub bays must be framed plumb, level and square using straight stock. I add extra studs and blocking to support the edges of backer board, plus double studs (left photo, facing page) to support tub enclosures, such as shower doors.

Tub surrounds need a waterproof membrane somewhere between the tile and the framing to prevent moisture infiltration. For this job, I installed economical 15-lb. asphalt felt beneath the backer board.

Before you install felt paper, it's a good idea to mark stud locations with a crayon along the top of the tub so you'll know where to fasten the backer board.

I staple felt to the studs or, if the framing is dry-walled, I laminate the felt to the drywall with cold-patch asphalt roofing cement. Adjacent bands of felt are lapped shingle-style to shed water. For insurance, I also seal the joints with asphalt caulk and run a bead of caulk along the top edge of the tub to seal it to the paper.

If I'm working solo, I usually cut the top band of felt paper into two pieces for easier handling (right photo, facing page). If you do this, lap and seal the vertical joint to keep out water.

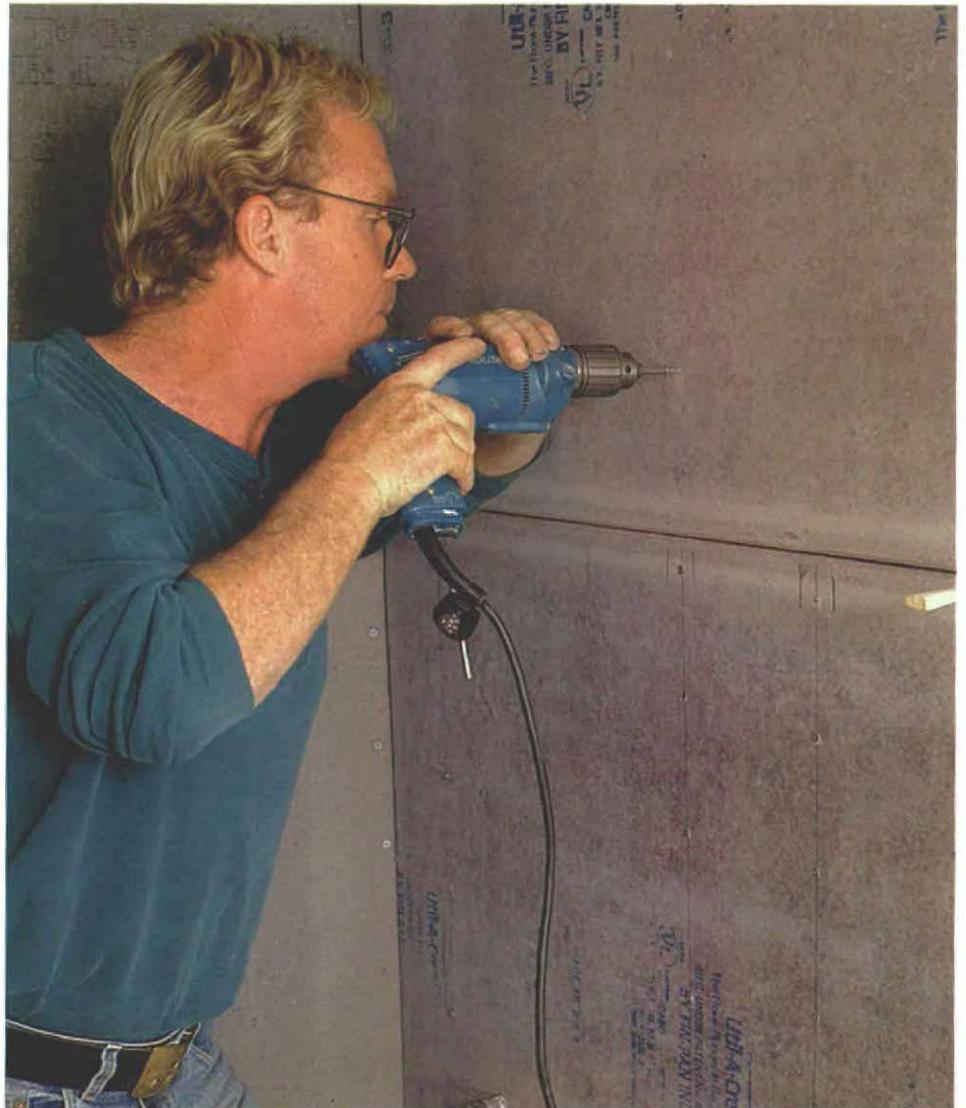
Preparing the backer board—I've used mesh-reinforced cement board for more than 10 years with excellent results. It has an aggregated portland-cement core with a fiberglass mesh embedded in both sides. Panels range from 1/4-in. to 1/2-in. thick, and they come in various widths and lengths for minimal cutting and easy handling. I sometimes use 1/4-in. thick board over drywall, but I don't use board thinner than 3/16 in. over bare studs because it's too flimsy.

I cut mesh-reinforced board with a carbide scribe and grind or power sand the edges smooth. I simply mark the cutline, align the straightedge with the mark and score the line with the scribe, making sure I cut through the mesh. Next, the board is flipped over, and the process is repeated. Then, I place a straightedge under the full length of the score, grasp the offcut and snap it off. If the offcut is too narrow to snap, I break it off in pieces with tile biters (see the section on cutting and drilling tiles, p. 84).

To make small plumbing holes in mesh-reinforced board, I use a carbide-tipped hole saw. For large holes, I'll mark the opening, drill a series of 1/4-in. holes around the perimeter, cut through the mesh on both sides, punch through with a hammer and then smooth the edge of the hole with a rasp.

Installing the backer board—Backer board can be hung with nails, but I prefer to use screws (photo above). They hold better than nails and put less stress on the boards during installation. I avoid regular drywall screws because their heads can snap off and because the screws can rust in a wet tub surround. I used Durock screws (U. S. Gypsum, P. O. Box 806278, Chicago, Ill. 60680; 800-874-4968) for this job. They come with a corrosion-resistant coating and built-in countersinks that help bury the heads flush with the panel.

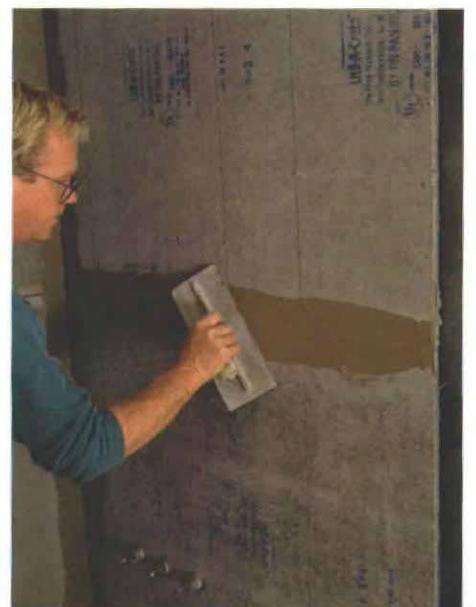
I hang backer board on the back wall first, then the side walls, holding the bottom course about



Anchor the backer board. You can use nails to affix backer board to the studs, but the board can be damaged during installation. Corrosion-proof screws are a better choice.

Tape the joints. Press self-adhering, fiberglass-mesh tape over the joints, applying three overlapping strips at inside corners.

Fill tape with thin-set mortar. Use a trowel to spread thin-set mortar over taped joints, forcing the mortar into the fabric of the mesh.





Measure the tiles. To plan tile cuts, space a row of tiles along a straightedge, measure the distance from the end of the row to each joint and correlate the measurements with actual wall dimensions.



Wrong trowel. Determine the right trowel-notch size by spreading mortar on a small patch of wall. Then, comb the mortar with the trowel and firmly press the tile into the mortar. Pull the tile away and assess the coverage. There shouldn't be any bare spots. This test was done with a $\frac{1}{4}$ -in. by $\frac{1}{4}$ -in. trowel.



Right trowel. Minimal squeeze-out and complete coverage on the back of this tile denote a properly sized and notched trowel for applying mortar. If mortar had oozed from the edges of this test tile, the author would have switched to smaller notches. This test was done with a $\frac{1}{4}$ -in. by $\frac{3}{8}$ -in. trowel.



Spreading mortar. Use the straight edge of the notched trowel to spread thin-set mortar. Use the notched edge to comb uniform ridges.



Setting the tiles. With the bottom of the tile resting on spacer blocks, the author tilts each tile onto the mortar and then presses it home.

$\frac{1}{4}$ in. off the tub to prevent water from wicking in to the board and to allow room for caulk. To speed installation, I start each screw by tapping it with a hammer before I drive it home with a power screwdriver. I space the screws according to the board manufacturer's fastening schedule and provide the recommended expansion gaps around panels.

For a contemporary look, end-wall backer board can be installed flush with adjacent drywall to allow the use of low-profile, surface-bullnose trim tiles (flat tiles with one edge rounded over). But I prefer to install the board so that it stands $\frac{1}{2}$ -in. proud, allowing the use of radius-bullnose trim to create the classic, curved look usually associated with mortar-bed work. To produce the $\frac{1}{2}$ -in. step, you either fur out the backer board or run drywall under it.

Backer-board joints get finished with 2-in. or 4-in. wide adhesive-backed fiberglass-mesh tape. In corners, I apply three overlapping strips of tape (bottom left photo, p. 81). Then, I trowel the same thin-set mortar over the tape that will be used for setting tiles (bottom right photo, p. 81). I like to finish the joints just before I set tiles to avoid mixing an extra batch of mortar and to avoid tiling over a thin-set ridge that should have been flattened but is now a chunk of stone.

Tile layout—The ideal layout for tiled tub surrounds produces a symmetrical appearance with minimal cutting. I start by aligning several tiles along a straightedge on the floor with a $\frac{1}{8}$ -in. spacer in each joint. Although many tiles have integral spacing lugs, they typically create a grout joint that's only $\frac{1}{16}$ -in. wide, which I think is weak looking. I like $\frac{1}{8}$ -in. wide grout joints because they're stronger and because they look crisp and clean. Tile spacers—X-shaped pieces of plastic—are available in various widths from any tile store. The number of tiles represents the longest run I'll have to tile—typically the distance from the top of the tub to the ceiling. I stretch a tape measure from one end of the tiles and record the distance to each joint (top photo, left). Correlating these numbers with actual wall dimensions allows me to plan my cuts before tiling.

Back walls usually look best with identical vertical rows of cut tiles at each end. I mark the vertical center line of the wall, plumb a level to it and scribe a pencil line on the backer board from tub to ceiling. When laying the tile, I'll work out from the centerline in both directions. End walls need one vertical line to mark the outboard edge of the field tiles. On this job, the plumbing wall would require one vertical row of cut tiles, which could be placed in the front or in the rear. Because the opposite wall would have full tiles all the way across, I chose to put full tiles in the back to match and to cut trim tiles at the front.

Instead of drawing horizontal layout lines on the wall, I level a straightedge above the rim of the tub with shims (unless the tub is level enough to work off of, which is rare). I tile from the straightedge to the ceiling, remove the straightedge and then fill in the bottom courses. Horizontal rows of cut tiles can be placed against the tub, the ceiling or both, depending on personal preference (I put them against the ceiling

on this job). They also can take the form of a decorative band somewhere in between.

Mixing and spreading mortar—Tiles can be bedded in mastic, but you'll get better results using thin-set mortar. It's a mortar-based adhesive that's mixed with water, epoxy resin or a liquid latex or acrylic additive that increases bond strength, compressive strength and flexibility. I use thin-set mortar mixed with 4237 liquid latex mortar additive (both made by Laticrete International Inc., 1 Laticrete Park N., Bethany, Conn. 06524-3423; 800-243-4788). If you're worried about fussing with too many ingredients, use a powdered thin set that includes a dry polymer additive and is mixed with water. Regardless of the mortar you use, don't mix it without donning a dust mask, safety glasses and rubber gloves. For best results, the temperature at the job site should be between 65° F and 75° F.

Although professional installers use power mixers, the strongest mortars are mixed by hand. Hand mixing doesn't infuse air into the mortar as some power mixers do. I begin by pouring all of the liquid and about 75% of the recommended amount of thin-set powder into a clean bucket. Using a margin trowel, I mix until most of the lumps are gone. Then, I add half of the remaining powder, mix, add the other half and mix again. You have to let the material slake (rest) for 5 to 10 minutes, then mix the batch once more until it's lump-free and ready to apply. The batch now should be plastic but not runny. I'm careful not to expose the mortar to direct sunlight (which can cook it) or to excessive air conditioning (which can dry it out). At this point the mortar should be wet enough to adhere to any surface instantly but not slip easily off the trowel.

Before applying mortar to the backer board, I wipe the board with a damp sponge to remove dust. I apply mortar with a standard notched trowel using the smooth edge to spread the mortar on the substrate and the notched edges to comb the mortar into uniform ridges. The notch size depends on the size of the tile, the condition of the substrate and the type of adhesive you are using. The general recommendation is to use a notch $\frac{3}{8}$ the depth of the tile. The best way to select the proper trowel, however, is to test it with the first tile you set (center photos, facing page).

Setting field tiles—Bathrooms that are used constantly should be tiled with vitreous tiles, which are virtually waterproof. This tub is a backup, so I used standard 4¼-in. wall tiles having a soft, thin glaze and a porous, chalky bisque (the clay beneath the surface). They are less expensive than vitreous tiles, and they are easier to cut.

I tile the back wall one quadrant at a time, followed by the bottom half and top half of each end wall. Beginning at the back wall, I shim a straightedge to provide a level work surface above the tub. Then, I trowel mortar over an entire section above it (bottom left photo, facing page). I apply the mortar in a thick, relatively uniform layer, and I press hard to key it into the pores of the backer board. That done, I comb the mortar with the notched trowel, maintaining constant contact with the board and keeping the



Prevent sagging trim. Keep the trim tiles from drooping as they set up by taping them temporarily to the field tiles. These are surface-bullnose tiles, which are used to end a row of tile when the backer board and the adjacent wall are in the same plane.

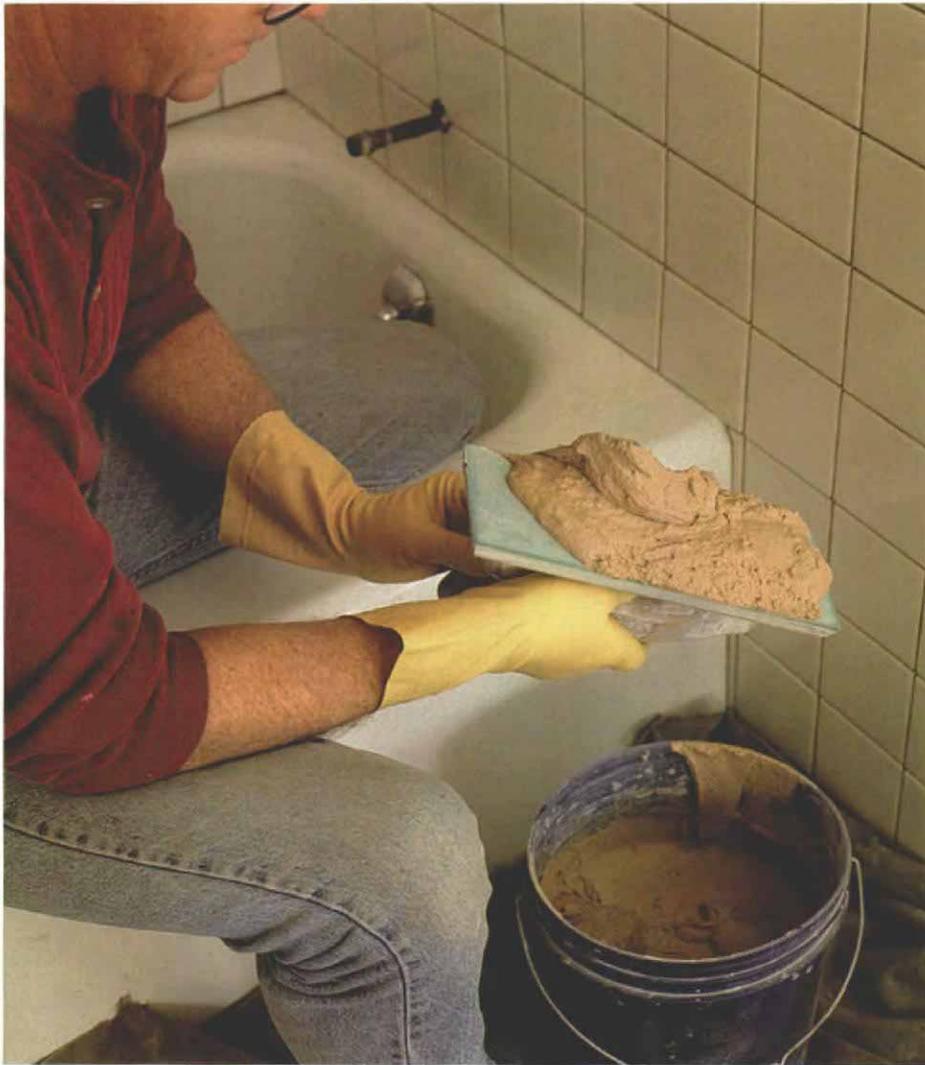


Butter the backs. For radius-bullnose trim, spread mortar on the flat part of the tile and grout on the curved part.

Look for squeeze-out. Press radius-bullnose tiles firmly enough so that grout oozes out. Remove the excess before it hardens.



Nibble the notches. Use a biter to notch tiles around plumbing, working in from the corners of the notch to prevent unwanted breakage.

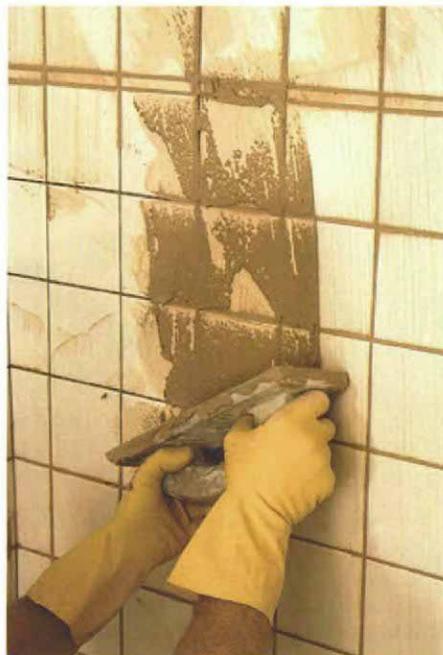


Ready for grout. Load freshly mixed grout onto the rubber face of a grout trowel.

Pack the grout. Hold the trowel at a slight angle and spread grout over a small section of wall. Work grout into joints until they are full.



Remove the excess. Hold the trowel nearly perpendicular to the wall and scrape off the excess grout with the edge of the trowel.



angle of the trowel consistent to produce ridges that are uniform.

I set the first row of tiles along the straightedge. I position the bottom edge of each tile first, then tilt it forward into the mortar (a process I call "hinging"). Then, I slip a spacer between each tile, adjusting the spacing of the tiles as needed. On subsequent courses, I hinge the tiles off the spacers (bottom right photo, p. 82). I lay all full tiles in a section first, then fill in any cut tiles. If the mortar skins over before a section is finished, you should recomb it. If you break the initial set by moving a tile, scrape the mortar off the tile and the substrate and apply fresh mortar. I keep a wet sponge handy for wiping goo off the surface of tiles before it hardens.

After I've tiled all the sections on a wall and all the adhesive has set up, I remove the straight-edge and install the bottom courses of tile, taping them temporarily to the tiles above to prevent sagging. Because I apply mortar carefully, I don't have to seat the tiles with the traditional beating block (a padded block of wood or plywood that's laid over tiles and rapped with a rubber mallet). Instead, I use one to coax tiles gently into a smooth plane.

To enliven this surround, I installed a liner at about eye level. A liner is a decorative horizontal stripe of tile, usually less than 1-in. wide, that's used to interrupt a field of tiles. Stock liners are available in unlimited sizes and colors, but I cut my own out of matching or slightly contrasting field and trim tiles. In some cases, liners can eliminate the need to install horizontal rows of cut tiles against the ceiling or tub.

Setting trim tiles—Surface-bullnose trim tiles are cut and installed just as field tiles, then temporarily taped to neighboring tiles to prevent sagging (top left photo, p. 83). To install radius-bullnose trim tiles, I apply a skin coat of thin-set mortar to the backer board and to the flat part of the tile backs. Then, I butter the curves on the tile backs with the same grout I use for tile joints (top right photo, p. 83). A small amount of grout should squeeze out the ends of each tile as I push it home (center right photo, p. 83). I lay the whole row, then nudge it into alignment with a straightedge, gently tapping the tiles flat with the trowel handle and applying tape to prevent sagging. When the grout begins to solidify, I pare the edge square to drywall with the margin trowel.

Cutting and drilling tiles—The snap cutter, which you can rent from many tile stores and tool-rental shops, is the tool to use for cutting tiles down to ½-in. wide. I mark cutlines on the tiles with a fine-point, felt-tip pen, then score and break the tiles with the cutter. I then ease the resulting sharp edges with a tile-rubbing stone.

Biters are used primarily for trimming tiles to fit around plumbing (bottom photo, p. 83). They have a curved cutting edge on one side and a straight one on the other that bites into the glazed side of the tile. To make holes in the middle of tiles, I use a carbide-tipped hole saw.

For removing less than ½ in. from tiles, you have to score the tiles with the snap cutter, then nibble to the line with a pair of biters, working in

from the corners of the tiles to prevent breakage. And, again, you would smooth the raw edges with a rubbing stone. To make a tile less than 1/2-in. wide requires a wet saw.

Grouting—Tile spacers come in various thicknesses, and some are thin enough that you can grout right over them. I prefer the thicker spacers, and I pull them out (using a dental pick) after the thin set cures. Once I've removed all the tile spacers and globs of thin-set mortar from the joints, I'm ready to grout. I check the thin-set container to see if there's a waiting period. If so, I wait, or the thin-set mortar might stain the grout.

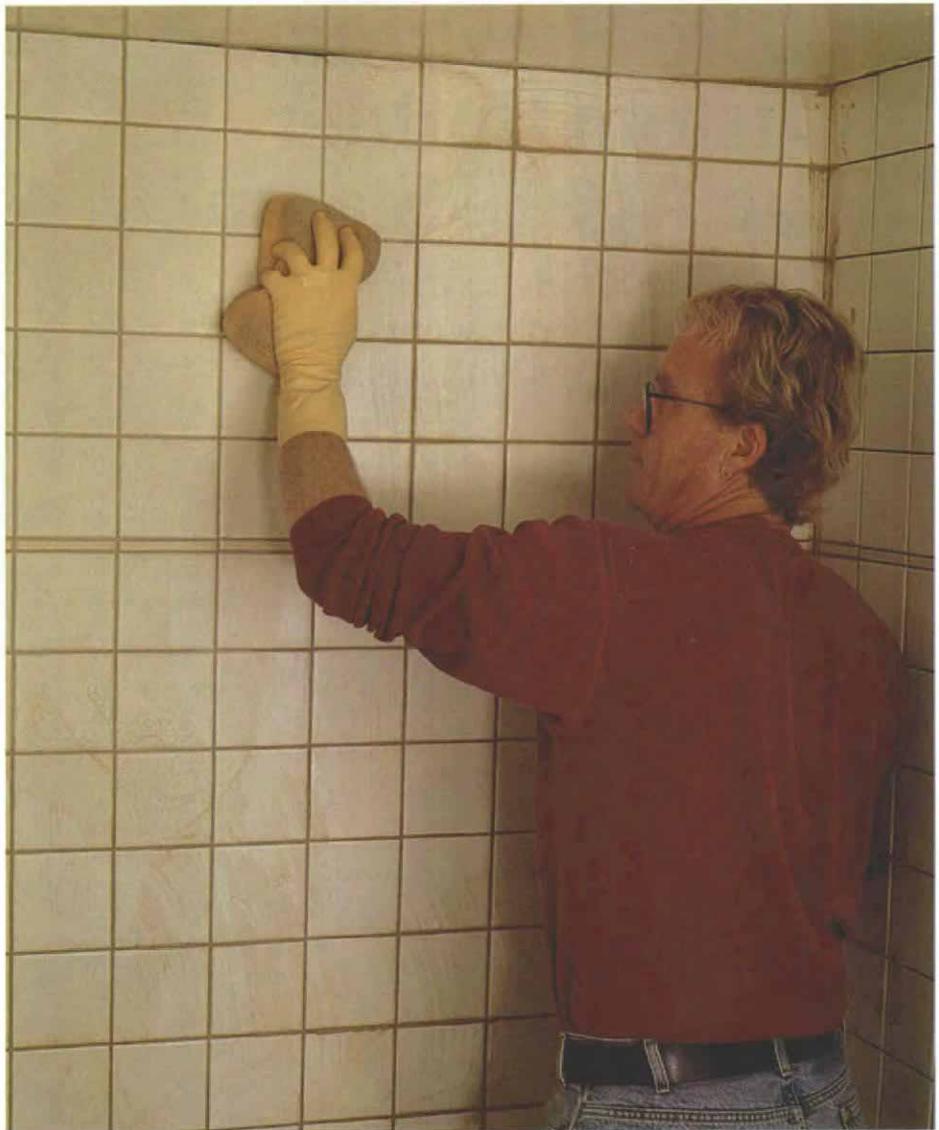
I use a powdered polymer-modified grout called Polyblend (Custom Building Products, 6511 S. Lake Ave., Bell, Calif. 90201; 213-582-0846), which is mixed with water. It comes in 47 colors, and the company sells caulks to match.

Only the rubber face of a grout trowel (top photo, facing page) can pack joints full without scratching tiles. I start with the back wall and use the trowel to spread grout over a small section. I tilt the trowel to a 40° angle or less and work the grout into the joints (bottom left photo, facing page). I attack joints from three directions, with each pass cramming more grout into the joint until it's completely filled. Once all the joints in a section are filled, I hold the trowel at a right angle to the surface and rake it diagonally along the tiles to scrape off excess grout (bottom right photo, facing page). I grout the entire wall this way, packing everything except for the expansion joint above the tub and gaps around plumbing fixtures. Because grout will stiffen in the bucket, it should be stirred occasionally.

Next, I thoroughly wring out a wet, rounded sponge and gently wipe the freshly packed wall in a circular motion to shave off high spots (top photo, right). I avoid feathering the grout over the edges of the tiles. Then, I complete the wet cleaning by making 3-ft, long parallel swipes with the damp sponge, using a clean face for each swipe (bottom photo, left). At this point, I rinse the sponge after every two swipes.

About 15 minutes later, grout haze should be visible on the surface of the tile. I remove it by rubbing the tiles with a soft cloth or cheesecloth. If that doesn't work, I'll try a damp sponge or white Scotch-Brite pad. At this stage, with the grout set up, I use a utility knife to remove the grout from the corner joint and from the 1/4-in. joint I left between the tile and the tub. These expansion joints need to be filled with sealant.

After all grouting and cleaning is completed, I let the job rest (bottom photo, right) while the grout cures and dries (usually about 72 hours). Then, I return to seal the grout and the raw edges of the tile with an impregnator. I use 511 Impregnator made by the Miracle Sealants & Abrasives Company (12806 Schabarum Ave., Building A, Irwindale, Calif. 91706; 800-350-1901). You have to allow the impregnator to dry before you caulk the expansion joints around the tub. I use a sealant that can be color-matched to the tile, the grout or the plumbing fixture. It is available either sanded or unsanded (ProLine Class A Sealant, Color Caulk Inc., 723 W. Mill St. San Bernardino, Calif. 92410; 800-552-6225). □



Fine tuning. After packing a wall with grout, use a damp sponge to shave high spots and fill voids.

Wet cleanup. Complete wet cleaning by making parallel strokes with a damp sponge, using a clean side of the sponge per swipe.

Dry cleanup. Fifteen minutes after sponging, wipe off grout haze with a dry cloth, leaving a tub surround ready for sealing and caulking.

