HOME
REPAIR
RESOURCE
CENTER

for do-self repairs

CERAMIC TILE FOR FLOORS & WALLS

TYPES OF TILE:

Ceramic tile is a term that encompasses many diverse products, from wall tiles to floor tiles to tiles used on countertops. They come with a variety of finishes, from smooth to rough, and from flat to irregular. They are made from a number of different products, from clay to porcelain to ceramics. They have either a sealed non-porous surface or a water-absorbing, porous surface. Whatever type you choose, all ceramic tiles are basically installed in the same manner.

PREPARATION OF THE UNDERLAYMENT:

The surface that floor tiles are attached to must be smooth and solid. Any movement of the wood underneath them will cause the tiles to crack. To provide the essential strength and rigidity, it is usually necessary to install **underlayment** first.

Underlayment usually consists of plywood. While 1/4" thick plywood is usually acceptable for a more flexible vinyl floor tile, at least 1/2" to 3/4" is required for ceramic. To add stiffness to the floor surface, use two pieces of plywood, each half the total thickness of the underlayment you desire. Install them one at a time, at 90° angles to each other. Once the underlayment has been glued down with construction adhesive for added rigidity and then properly nailed in place, fill any cracks or gaps with floor leveler to provide a smooth, continuous surface upon which to lay the tile. *(See separate handout on "Floor Underlayment" for how-to instructions.)*

An alternative to plywood underlayment is **backer board**, made from a concrete-type product that is impervious to water. It is particularly appropriate for use on bathroom floors, where water spills are common. You cut the sheets to size with a carbide scoring tool or a circular saw with a masonry blade, and then glue the pieces in place with construction adhesive or thinset mortar.

INSTALLING FLOOR TILE:

Floor tile is laid from the center of the room outward. To locate the center, measure from the longest straight wall across to the other wall at either end, and find the midpoint of each line. Then, strike a chalk line joining these two midpoints. Repeat this process in the other direction. You should end up with two lines that cross each other in the center of your main floor area. That point is the center of your room.

Before gluing down your tile, however, you need to check your layout to make sure your tile is balanced around the walls. Starting at the center point, lay out one straight line of tiles in all four directions to the walls. Some tiles have small ridges on their edges that won't allow them to touch each other; these are designed to provide a uniform space into which you'll later install **grout** (the material that seals the gap between tiles.) If the tiles you have selected don't have these ridges, then you'll need to buy plastic **tile spacers** (small plastic "crosses" that you insert between adjacent tiles to maintain even spacing.) If you'll need to use spacers, put them in during this initial layout to get an accurate idea of how the tile will end up at the wall.

Ideally, the tile piece at each wall should be equal in size to the piece on the opposite wall. If your layout doesn't result in this even sizing, shift your center line one way or the other *(see illustration on next page)* to balance the tiles. Do this until all your edges are as evenly spaced and balanced as possible.

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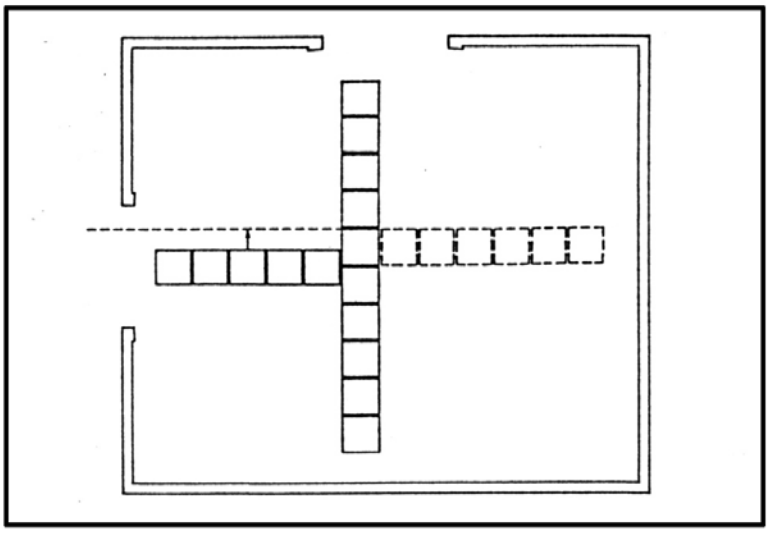
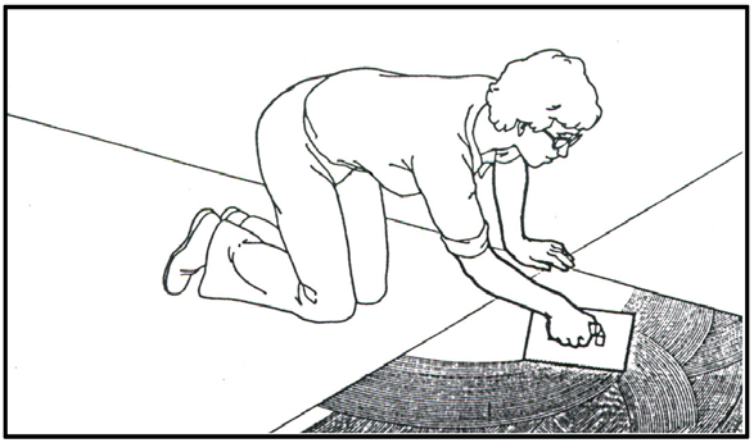


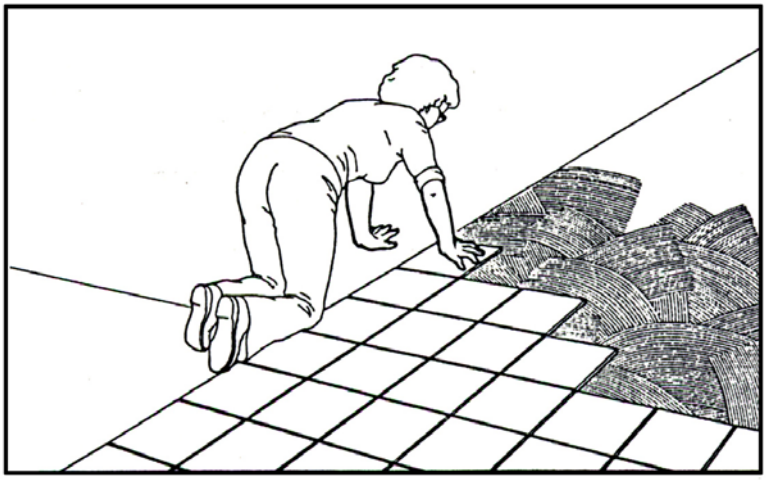
Mark any adjustments you have made to your intersecting lines and the center point, and pick up the tiles and spacers. The next step is to mark some **chalk lines** as guides to keep the tiles straight as you install them. It's probably sufficient to mark every other row. (Remember to include the spacers when marking the widths of the tiles.) When finished, your floor should look like a giant checkerboard.

Now you are ready to install your tile. The instructions on your tile adhesive will tell you what notch-size **trowel** you'll need. (The notches create grooves in the adhesive as you apply it, allowing room for it to spread as the tile is pushed into it and settles down flat.) Start in one quadrant of the floor, as determined by the center crossing lines, and spread the adhesive over about a three-foot square area at a time *(see illustration below).*



Start laying the tiles *(see illustration below),* following your lines and using spacers (two on each side of the tile.) As you install subsequent tiles, be careful not to move the previous ones.

Spacers keep grout width consistent



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When you have this area installed, go back over the tiles with a **rubber hammer**, gently setting each tile firmly in the adhesive and driving out any air bubbles. (This will greatly reduce the chance that the tiles will crack later.) After using the hammer, move a 2' to 3'-long **wooden straight-edge** or **level** along the top of the tiles, to see if you have any tiles that are sitting higher than the others. Tap them down until the tiles are all uniformly level.

When you finish one section, move on to the next, until you have installed all the full-size tiles (called *"field tiles")*. Don't remove the spacers until the adhesive is set, at least overnight.

Next, you will probably need to cut edge pieces (the *"border tiles.")* You can use various types of cutting tools, depending on the type of cut needed. **Tile nippers** will allow you to break off small chunks to make minor adjustments to the tile. You can also remove small areas of a tile using a **hack saw with a carbide blade**. In most cases, however, you'll be cutting one side of the tile along a straight line, to adjust the width to fit against the wall. For this job, you can use a **hand-powered cutter** that will let you score the tile along the cutting line and then apply pressure to break the tile along the line you have scored. (Special attachments to this tool can let you make holes in the tile for water pipes, etc.) If, however, you need to change the direction of your cut to make an "L-shaped" opening (for example, to tile around a corner), then you'll be better off using a power saw. While you can equip a table saw with a tile cutting blade, most people find it easier to use a **"wet saw"** that sprays water over the tile as you cut to allow more accurate results. Rub a **smoothing stone** along the cut edges after using any of these tools.

After cutting the border tiles to fit, install them the same way you did the field tiles, using the spacers. After all the tile is installed and has had a day to set up, remove the spacers and clean off any adhesive on the tile surface.

Now, install the grout between the tiles. Grout with sand is generally used on floors; smooth grout without sand on walls. If you mix the grout (which is in a powder form) with a **latex bonding additive** instead of water, it will provide a stronger, more waterproof seal between the tiles. Mix the grout to a plaster-like consistency, and spread it with a **rubber-bottom grout trowel**. By moving the trowel at a 45° angle across the surface, you can fill in the gaps between the tile. After the gaps are filled in, take a wet **sponge** and lightly remove the grout from the surface, changing sponge water often. You'll need to repeat this procedure several times, to remove the excess grout; mop the floor the next day to remove any residue.

WALL INSTALLATION:

You use the same technique to install tile on a wall as you do on a floor. Locate and center the tile in the same way, and use the same method to install and grout it in place. Wall tile usually has more of a tendency to slip or slide down, so you'll need to pay particular attention to keeping the rows straight.

The best wall surface for tile is concrete backer board *(see "Preparation of the Underlayment," on page 1.)* Plaster and drywall are not good wall surfaces for attaching tile in a tub or shower surround or other areas frequently exposed to water.

REPAIR AND MAINTENANCE:

The two areas most likely to need attention later are cracked/broken tiles or damaged grout. Cracked or broken tiles can be replaced by chiseling out the bad tile *(see illustration next page),* being careful not to break the surrounding pieces. Clean off the wall or floor behind the tile, and then glue the back of the replacement tile and set it in place. After it has set, you can grout it.

Grout can be renewed by scraping out the bad areas, or even the entire area if you so choose. A **grout saw** works best for this job; it will remove the top 1/4-inch or so of grout. After scraping, you can re-grout the area as described above. It's important to replace grout as soon as it appears defective or has hairline cracks, to keep the wall or floor watertight. Once water is able to penetrate under the tile, it will destroy the floor or wall beneath it and cause the tile to literally fall off – requiring total replacement.

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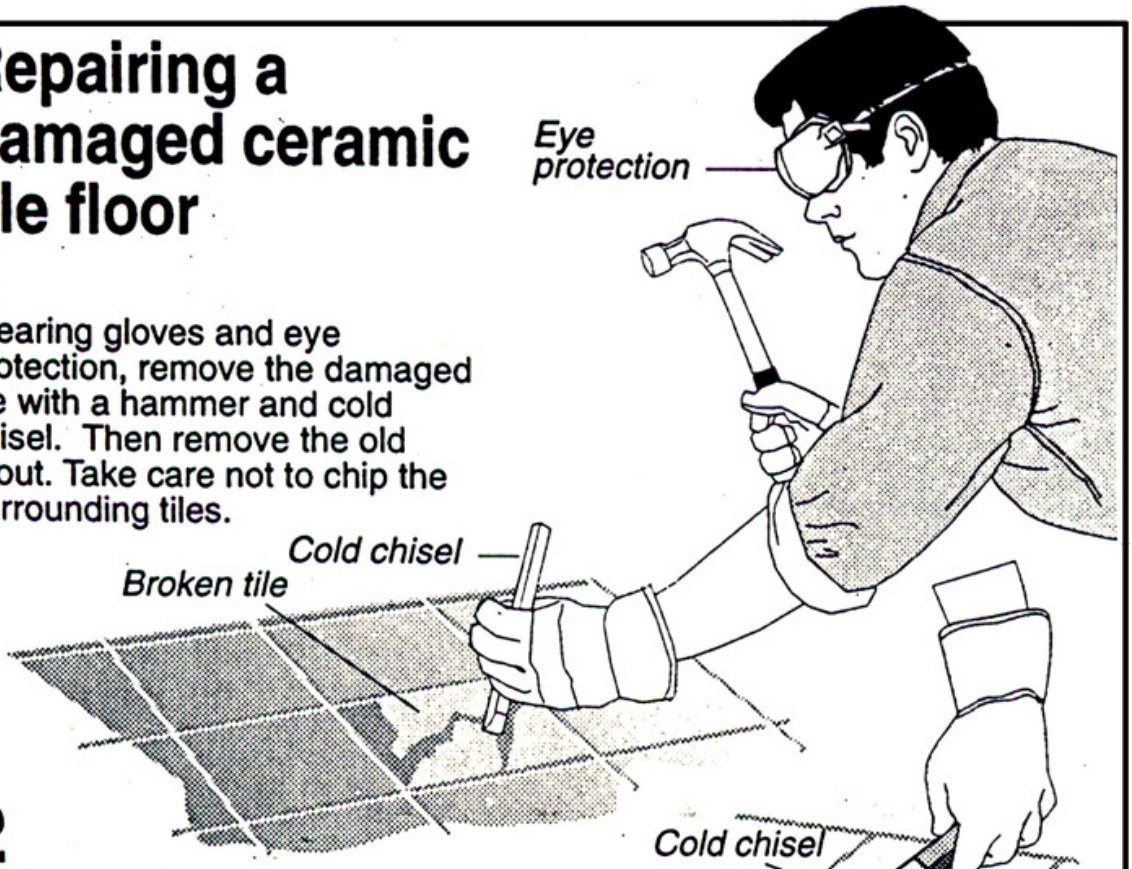
Repairing a damaged ceramic tile floor

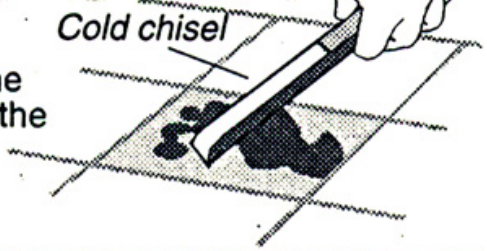


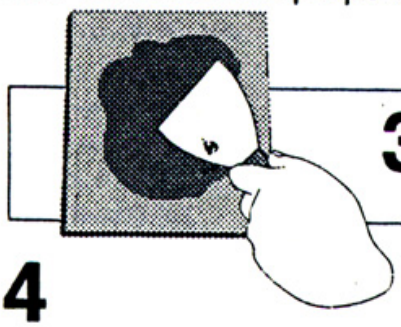
1

Wearing gloves and eye protection, remove the damaged tile with a hammer and cold chisel. Then remove the old grout. Take care not to chip the surrounding tiles.

2

With a cold chisel, remove as much of the old adhesive as possible. This will allow the new tile to adhere properly.



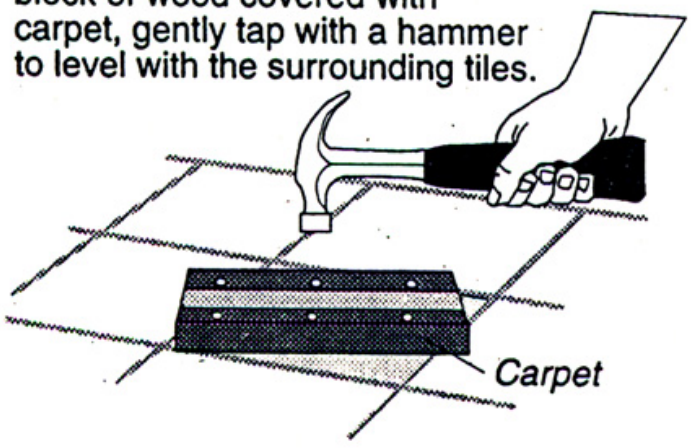


3

Apply mastic to the back of the tile. Spread it out to the edges of the tile.

4

Set tile firmly in mortar. Using a block of wood covered with carpet, gently tap with a hammer to level with the surrounding tiles.



5

Apply new grout with a rubber grout float. Use a damp sponge to remove excess grout.