

# Smart Words for Smart Homeowners

THE EXPERIENCE OF EXPERTS AND THEIR ADVICE ON RELEVANT HOMEOWNER TOPICS

## A No Shortcut Tile Job = The Best Results

### Overview

Ceramic floor tile and a mosaic border? Every time you see this you wish that you had one. What to do? You have a large kitchen that screams “place Italian ceramic tile here.” “Add a mosaic border surround.” “Make it unique and do it right.” But the subfloor is uneven and had been flooded, so parts of it are warped. Some corners are higher than others where the plywood edges meet. Some of the old mastic (the nasty, old, hardened black glue) is still evident and can’t be removed without splintering the wood. Besides all that, the wood subfloor has a few 1/4 + inch spaces where the edges do not meet. It’s a real disaster. You can take this ugly, tired old frog and make it a handsome prince.

If you want the best outcome for all the days of hard work and thousand of dollars in materials you’ll be investing. There’s only one right way to lay this tile; a mud job. They’ve been doing it this way for centuries because it lasts for centuries. When done right, it will look perfect and it will make you proud to own this care-free floor. By the way, it will add appeal and value to your home.

### The Foundation (Step #1 Plywood)

There are any number of shortcuts you could take but laying new 3/8” plywood over old, uneven, scarred, rotted, not level, poorly gapped, warped, crudely aligned floor is the best way to start. You need an even, tight base layer to support all the upper layers that you’ll be adding. It will not take as long as you think to fit ≈ 4’ x 8’ sheets on top of the old frog floor.

Before laying the plywood, vacuum the floor to be sure it’s clean. When fitting the plywood sheets make sure you butt the edges tightly against each other. Be sure there are no large seam openings, high corners or spaces. Alternate the sheet corners so there is no single long seam in the room. This one room long seam will be the first to “offer a memory” and possibly a crack. (See drawing)

The next step involves stapling, screwing, or nailing the new plywood to the old floor.

I don’t like to use nails and I’m suggesting you don’t. On 3/8” plywood I like to use a 1” long staple and a pneumatic staple gun. Rent one with its compressor for 1 or 2 days and the job will go faster and results will be better.

I like staples because as the staple penetrates the wood layers, each pin of the staple travels at a slight offset to the other; one goes left the other goes right. Each staple makes an almost extraction-proof and vibration-proof insertion.



If you must use nails and a pneumatic gun, drive each nail at an angle; not exactly perpendicular to the flooring.

If you use screws be sure to counter sink every head.

You need a minimum of 5 screws or staples or nails per 1 square foot of board. More is better. Kiss close to the seams a little extra to be safe.

### Fit Tile Under The Molding

Butt the plywood to all walls and under all molding. So you don’t splinter the molding as you’re cutting them, cut the moldings using a thin razor sharp ‘pull saw’ sometimes called a Ryoba [Not Ryobi] saw. This thin blade, fine tooth saw, makes short work of this task and will not splinter the existing molding. Buy one at the local hardware store.

The amount you remove from the trim and molding depends on the overall thickness of the items you’ll place under the trim. Add the tile thickness + plywood thickness + thin-set thicknesses. From here, I judge that to be about 7/8.”

## Lift Appliances Over The Subfloor And Tile

You must lift the appliances and slide the plywood under the legs of built-ins, stoves, compactors, dishwashers, etc. If you ever have to move or repair appliances that are embedded below the subfloor and tiles you'll have a very hard time doing it. Please don't ask me how I know this simple fact. I've been doing this much too long not to have made all the mistakes at least once.

## Eliminate Pipe Noise

Cut oversize notches or spaces in the plywood for every pipe and heat element. Put a small foam pipe cover over all pipes to ensure they are free to expand when hot. Failure to do this will result in cracking noises when they are surrounded too tightly.

I like to add foam pipe insulation around every pipe to ensure that no thin-set migrates onto or near the pipe. I do not want pipes to give me problems later and if a pipe ever needs to be repaired it will be removed easily.

## The Foundation Step #2 (the Mesh)

On top of this solid plywood surface you'll add a layer of mesh screening and then embed a layer of thin-set mortar. The screen acts as a vibration absorber and a perfect holder for the thin-set. Staple the mesh screening to the plywood with the same rule of thumb; about 5 plus staples per 1 square foot of screening. Staples are best for this operation also.

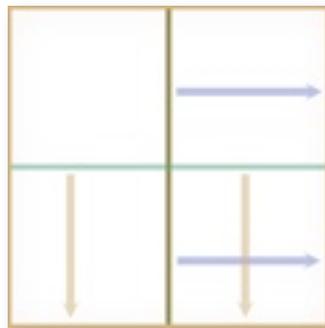
Be very careful handling the screening because it is sharp and will cut your fingers, so wear leather gloves or pay the price in minced meat fingers.

## The Foundation Step #3 (thin-set Mortar)

As soon as you have two or three sections of screening stapled/screwed in place, you can begin to trowel thin-set mortar into it.

The idea is to trowel the mortar evenly into the screening and level the mortar using the screening top as a leveling guide. When it's all dry, it is one solid vibration-retarding and unmovable unit.

This layer, when dry, is a solid, unmovable base of dense cement which will support the tiles and act as a firm foundation for the tile layer.



## Finding Room Centers

Among the most important things you can do to screw up the layout and appearance, is to fail to locate the optical center of the room when planning to lay any kind of tile: especially one with a mosaic border.

## The Optical Center

I said optical center, not true center. I didn't want to make this too easy for you. Most kitchens have cabinets in many places and appliances that are not the same depth as the walls. Trying to find true center of this kind of protruding set up is silly. If you add baseboard heat or conventional radiation, that again throws off the concept of true center. What I want you to do is locate the optical center of the room so we can calculate a border width around the room that makes sense and looks good. Take your time to be right.

This is a logical place for the mosaic trim to be placed, but more importantly it is also a starting point for calculating the location for the first row of tiles.

The optical center line is the start of the first row of tiles...BUT do nothing until you have examined how the mosaic border will outline the room. You will lay the first row of tiles inside this border starting from the other end of the border.

We use a laser double so that the line we draw is perfectly straight, square, and perpendicular. If not, that first row of tile and all the others, will be off. The perpendicular laser allows us to move the lines to get the best whole tile coverage when installing a mosaic border.

## Layout Is Everything

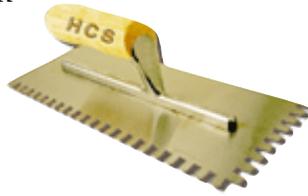
When you think you have a perfect line for the first row, take a break, have lunch, make coffee. Just do something that gets you away for fifteen minutes. When you come back,  measure the ends of the lines you've drawn against the three closest walls. Make sure they are the same measurement all along the lines. Do this so that when you begin cutting the tiles you can cut multiples of the same size that go against the walls. This also ensures that the longest lines will be straight to the trained eye. In other words, it is right and it will look right on!

## Laying The First Row

Pick the closest tile to the border and begin to lay tiles in the long direction. Lay the first tile on the perpendicular. Lay five tiles long and one tile wide. Continue to measure the distance to the walls. The measurement will not change if you did the layout correctly.

## Buttering The Tiles

Pull a lump of well mixed thin set mortar from the mixing bucket with a pointing trowel. I use this tool to place (more like plop) mortar on the back of the tile. Butter a thick coating of mortar on the entire back surface of the tile. The coating of thin set mortar should be thick.



Now, using the notched edge of a notched trowel, rake off some of the mortar, leaving the groves in place. This trowel has notched groves that leave an even, level height of mortar on the tile and scrape off the excess mortar.

The profile of the buttered groves, made by the trowel on the tile backside, should look even and almost level, like the following drawing. In other words, don't have big clumps on one edge and a thin coat on the other. This will help the leveling procedure when you stick the tile with its back to the floor.



## Stick It To The Floor

You have a number of competing objectives when placing the buttered tile on the hardened thin-set floor:

- ✓ the tile must be level
- ✓ it must be flat
- ✓ it must align with the laser lines
- ✓ it must be square
- ✓ it must be perpendicular to the tile on its side
- ✓ the tile must be spaced evenly so the entire room is in line.

To help you accomplish this a smart tile person developed nifty plastic tile spacers. If you look closely, you'll spot the spacer holding open and aligning the three tiles in the picture above.



## Using Spacers

Spacers are a God-sent little device shaped like a plus sign. They are hard enough to help maintain tile alignment and soft enough to not get in your way. Spacers come in a size to fit the amount of grout that you'll be using on your tile job and the grout spacing that is logical with the size of tile you are using. They are cheap too. You'll find them with and without pull-tabs. You can find the spacers you need locally.



Place a spacer on each corner of the tile you lay. That will help set up the even alignment you must maintain for every corner and every line for the entire room.

Please remove all the spacers after the tiles have set and before you grout the tile.

You can find the new pull-tab spacers locally.



## Getting To Level And Flat

On the tool list provided below you'll notice a level, a 2" x 4", and a mallet. This is the set that will help you get every tile to the position of level and flat.

As you place the buttered tile on the hardened thin-set, your first objective is side to side alignment - that's how the spacers help.

The second objective is flatness and level with all other tiles. This can be difficult to achieve, but if you proceed with each placement slowly, it'll get easier and your skill level will increase.

Keep in mind that if you are not satisfied with the result of each tile before moving to the next tile, you can always remove a tile, re-butter it, re-notch it, and lay it again to make it square, level and flat.

After laying and pressing each tile to the floor, tap it with the mallet until it's close to level. Move it toward other tiles to make it square first, then lay the 2" x 4" on top of it and a row of its adjoining tiles. If you see any space under the board



your working tile is not flat. Now, tap the tile slightly on the high side to bring it into flatness with all the adjoining tiles. They must all be flat, straight, level, and square.

### Hint

If, while your laying tiles, the thin-set in the bucket begins to get hard just throw it away and mix another batch. Mix smaller batches.

### Leaving Space For Mosaic Borders

Remember that you are usually inserting the mosaic lengths into a space left in main floor tiles. The space you leave must be clean, straight, and consistent. As this example illustrates, the mosaic we chose was 2" wide by 12" long. It is close to the same thickness as the tile we are outlining. You need to make room for the 2" width mosaic with a consistent channel opening. To do this, we fashion a long wood pattern that is 2" wide x 1" thick x 20" long. Using a wood template (we like poplar) like this holds the standard 2" width consistently and helps keep mortar out of the channel we need for the mosaic.

### Adding Mosaics Or A Frame

Once you have the main floor installed, you must scrape away any thin-set that has oozed to the outer edges. This mortar bleed will interfere with the level installation of the mosaic sections if not removed. Typically, the mosaic sections are glued to a mesh bottom, a "skin" for easy handling. The mosaics are assembled on a sheet with the skin holding the sheet together.



Mosaics come in lengths and widths that make it easy to sell, store, ship, and install. In most cases you'll need to cut the sections either to make the corners butt, like a picture frame, or to fit the sections of your design.

Before you cut any mosaics strip section, mount the section onto tape. Tape the mosaics strip on top and bottom. Without tape, the small segments will chip and fly as you cut them and you could get hurt. Always put safety first.

There are an unending supply of decorative and traditional mosaics that you can incorporate into your

design. Take your time. Buy a few and experiment. The results can be extraordinary.

### Kinds Of Grout

There are two kinds of grout that are readily available at home centers. For thin joints, narrower than 3/8", use un-sanded grout. For joints wider than 3/8", use sanded grout. These work best in the groves they were made for, so do not use any other.

### Grout Color

Grout color is a matter of taste and style, so do your best to pick a grout color that fits the tile and the room's function as well as the decor. Some people like to closely match the tile and grout color, while others will offset the tile color with a lighter or darker shade of the tile color.

### Where To Start

Do not grout yourself into a corner. Grout the floor so that you are not traveling across freshly grouted joints. Always leave the perimeter joint spaces open. This is necessary for expansion. Yes, even concrete expands. The perimeter joint can be filled with caulk or sealant or, as in this case, left open to be covered with wood base trim.

### Grouting

Grouting is a series of important small steps:

- ✓ filling and stuffing the voids
- ✓ ridding the excess grout
- ✓ sponging the excess grout before it cures
- ✓ sponging the haze before it cures
- ✓ polishing this haze after it cures.

Be sure to allow the tile floor to cure for at least 36 hours prior to the grouting process. Make sure the tiles are clean before starting to apply wood grout.

Mix small batches of grout according to the instructions on the box or bag.

I like to dampen (not puddle) the joints with water prior to applying the grout. A good fine mist from a spray bottle works best. This makes the grout relax into the damp voids between and under the tiles. This action also provides a strong and smooth bonding to the tile edges.

Press the grout into the tile joints using a hard rubber grout float. A 45-degree angle is best to force the grout into the tile joints. Work in a small area, 2 - 3 square feet at a time, applying enough grout to fill the joints.

After the voids are filled, move the grout float diagonally over the faces of the tiles flush with the tops of the tiles. This will remove a large portion of excess grout.

### Sponge Action

Keep working in small areas. Now that the grout is in place and the tiles are dirty with grout film, it's time to clean the area of grout. As you do this, clean the sponges often and always ring them dry. You should apply with just enough pressure to move the sponge on the tile tops. This is accomplished by pulling the sponge across the surface of the tile diagonally.

The idea is to clean the excess grout off the face of the tile and give the joint a smooth finish. Do not disturb the grout with too much sponge pressure or too much moisture. You are pulling excess grout film off the tile tops. Have patience.

The final grouted joints should be smooth, uniform in color, uniform in depth, and not have any pinholes, swirls or voids. Let the grout cure overnight.

### Grout Haze

Any remaining dried grout haze, that leaves a white film from insufficient sponging, can be polished using cheesecloth or towels. Do this after the grout cures.

Tools You'll Need	
Tile Cutter or Tile Wet Saw	Grease Pencil
Grout Packer	Lead Pencil #2 or Carpenters Pencil
4' T-Square	Pointing Trowel
Carpenters Square	Tile Spacers
Notched Edge Trowel	Two clean 5 gallon pails
Carbide Tile Nippers	Lots of Rags
Safety Glasses	Grout Haze Remover
Large Hydrophilic Grout Sponge	
Two Scrubber Sponges	Knee Pads
A 1" x 1 1/2" x ≈ 3' long poplar spacer & place holder for mosaic inserts	
Professional Gum Float ≈ 4" x 9 1/2"	
A dead blow hammer with a fiber or hard rubber face and filled with lead pellets. Not a regular hammer!	
Music to soothe the savage beast.	

### Not For Beginners

This paper may read like one of those "everything you ever wanted to know about a mud job" paperback manuals. It's not. This is a how to do it right blueprint that needs one key ingredient; your tested common sense. If you've never accomplished a successful home project, please do not start with this difficult endeavor. Laying ceramic tile is not for beginners.

Laying a mosaic border is not for an untested weekender. If you have experience with the trials of home tasks and have laid a simple ceramic floor successfully, you may want to set aside a long weekend and try this with an equally experienced friend.



### Sealing The Grout

**IMPORTANT:** If you want a perfect tile job, want the grout to last twice as long and look new longer, there's only one thing to do. The best way to protect grout is to seal the grout with a clear masonry sealer. This is a simple step that takes time but provides wonderful results. It's how the professionals finish the job and please the customer.

There are two basic types of sealers: wet look and low luster. They may be called by different names by different manufacturers but the story is no more complicated than the names.

Sealers are clear, non-yellowing, high solid, acrylic-based masonry sealing liquids. They are typically used in large quantities to waterproof mortar...cement. All you want to waterproof is the thin grout line. As a bonus you'll also stain-proof, coffee-proof and turkey gravy-proof the same grout line.

Think of the sealant as a concrete protectant that you'll paint on the grout line and immediately wipe off all excess on the tiles. I think the high gloss, wet-look stuff lasts longer.



### Dancing On The Floor

When the floor is finished and before the furniture is back in place, dance on it. When you're finished dancing, raise your right hand way above your left shoulder and pat yourself on the back. Now, take a bow... you've just added thousands of dollars of value to your home.

