

# Installation of Floor Tiles

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Always consult a tile installation professional prior to installing the tile.

Always read the warnings, warranty and instructions provided thoroughly and contact the manufacturer(s) prior to application if you require clarification regarding proper handling & use.

The use of safety glasses, respirators, dust masks, gloves and knee pads is strongly recommended when handling any materials that contain chemicals.

The steps and materials used for installing tile floor are different than installing wall tiles. Ensure you select the right materials and are following the right processes for your installation project.

## *Preparing to install floor tile*

Before tile installation, please ensure enough cartons for the entire project are obtained of same caliber, shade, and tonality. Tile cutting, wastage as well as installation patterns will necessitate having extra tiles available for the job. It is also recommended to save extra tiles from the same lot in case any future replacements are required. Work with a professional to calculate how much tile will be required and to plan or perform the installation.

All tiles should be inspected for any visual defects prior to installation. For best results in any tile project, tiles must be blended from various cartons to achieve an aesthetically consistent blend to avoid forming any unwanted patterns in your new floor.

## *Prepare the substrate*

The substrate must be properly prepared before laying any tile.

It is not recommended to install tile directly onto a wood subfloor. No matter how firm the subfloor; the plywood will expand and contract at a different rate as the tile, causing cracks to develop in the grout lines or tiles over time. On a plywood subfloor, you need either a layer of cement backer board or an underlayment membrane between the subfloor and tile for the thin-set adhesive to achieve a good bond.

When applying cement backer board over a plywood subfloor, be sure to adhere the two surfaces together with thin-set adhesive; and screw the cement backer board down with special screws that countersink into the backer board.

Ensure a suitable subfloor / substrate that meets the geographical building code requirements for your region. Make sure the subfloor is uniform, level, the right thickness and in good condition. Clear the substrate of any dirt, debris or contaminants that can prevent adhesion. It is recommended to consult a professional installer to determine if there are any special requirements for your project.

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## *Dry Layout*

Mark the centre of two opposing walls and snap a chalk line between these two marks. Do the same thing for the other two walls, forming a cross in the centre of the work space. Check if the inner section is square. This cross section will identify the starting point of the tile.

Lay the tiles loosely along each of the reference lines, use tile spacers for a more accurate measurement. Leaving approximately a ¼ inch between the perimeter tiles and the walls or cabinets to allow some room for expansion.

If the gap between the last full tile and the wall is less than a half tile, adjust the reference lines to make the tiles wider along the perimeter, keeping equal widths on each parallel side. Once the reference lines are set, remove the loose laid tile. For larger areas, mark a grid of 3' squares along the floor, creating smaller work areas, allowing you to ensure accuracy and to adjust as necessary as you go.

For more detailed specifications on flatness and lippage, grout joint size and pattern considerations, always consult a tiling professional and the latest edition of the Tile Council of North America (TCNA) Handbook for Ceramic, Glass and Stone Tile Installation.

## *Installing floor tiles*

Start by mixing the thinset mortar to the recommended consistency – mix the mortar in workable batches. You will start laying the tiles at the cross section in the centre of the room, as per the reference lines, and work out from there, that way the full tiles are in the centre of the room and any cut tiles will be along the edge.

Starting at the cross section in the room, spread the thinset with a trowel, work in small sections approximately 3' x 3' at a time (use the reference grids created during the dry layout stage). Try not to cover your reference lines.

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Once the thinset mortar is down, run the notched side of the trowel over the mortar at a 45 degree angle. Work in one direction to ensure a consistent and uniform application. Remove any excess mortar with the trowel.

Lay out tiles onto the mortar along the reference lines, lightly pressing and gently twisting the tile into mortar, use spacers between the tiles. You can lift the tiles to check if the mortar is sticking to the tile. If the mortar is not sticking, you can apply additional thinset to the back of the tiles. It's recommended to periodically check the tiles to ensure that there is proper adhesion.

Once your tiles are set, check for any high spots using a level. Even them out using a rubber mallet. Continue to check that the tiles are level as you complete the installation across the room. Make adjustments to the installation as necessary to ensure that the tiles are aligned straight.

Any mortar on the face of the tiles can be wiped away with a damp sponge.

Use a tile cutter or wet tile saw to cut tiles to fit into place along the room's perimeter where necessary. Be sure to remove any chalk or materials made to mark the cuts off of the tile prior to installation.

Allow the thinset mortar to dry for at least 24 hours before grouting.

Polished porcelain tiles should be sealed prior to grouting. While porcelain floor tiles are dense, durable materials that require little maintenance, polished porcelain tiles are slightly different. The polishing process leaves tiny, nearly invisible surface pits, which can catch grout and other debris, dulling the shine. To prevent this from happening, polished porcelain tiles should be sealed with an impregnating sealer prior to grouting. The sealant will fill these tiny holes, and act as a grout release. The impregnating sealer will not affect the surface or finish of the tile the way a topical sealer would. For best results follow the manufacturer's instructions and future maintenance recommendations.

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For tiles that are 12 inch by 12 inch or larger it's recommended to lightly coat the backs of the tiles with thinset prior to setting the tiles.

## *Installation Question*

Please contact the Tile Council of North America with any technical installation related question <http://www.tcnatile.com/contact-us.html>, or connect with your local flooring dealer who can help you find a professional installer to assist with your tile installation project.

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# Selecting & Applying Grout

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Always consult the grout manufacturer to determine the appropriate product for your installation needs. It's highly recommended that you consult with the grout manufacturer or a tile + stone installation professional prior to installing the tile or stone.

Always read the warnings, warranty and instructions provided thoroughly and contact the manufacturer prior to application if you require clarification regarding proper handling & use.

The use of safety glasses, respirators (masks), gloves and knee pads is strongly recommended.

## What is Grout?

Grout is used to fill the spaces between individual tiles and is generally composed of a cement based material, either sanded or non-sanded that dries to become a permanent component of a tile installation.

Epoxy based grouts are also available, these use plastic resins combined with the grout and offer enhanced stain resistance and a larger colour assortment, but are often more expensive than standard grout options.

The colour of the grout used can have a significant impact on the overall aesthetics of the final tile or stone installation and should be taken into consideration before starting a project.

## Different Types of Grout

Selecting the right grout for your particular installation will reduce maintenance and enhance the overall appearance of the space.

There are four basic types of grout available:

- Urethane Grout
- Epoxy
- Non-Sanded
- Sanded (also called Unsanded)

## Non-Sanded Grout

Non-sanded grout, commonly called wall grout, is cement based and is generally used in projects with grout joints smaller than 1/8 inch wide. If non-sanded grout is used to fill wider joints, the grout may become brittle and crack due to the lack of bonding. The grout will shrink as it cures. Grout joints should be sealed after installation to prevent water absorption and cleaned as part of a regular maintenance routine.

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## Sanded Grouts

Sanded grout is generally used for larger joints (larger than 1/8 inch) and is the most common type of grout used for ceramic tiles. It's a cement-based mortar that has small sand grains added to it for a stronger bond. The sand particles prevent the grout from shrinking as it cures. While a great option for heavier tiles such as those made of natural stone, take caution when using sanded grout as the sand in the grout can scratch the polish of the stone, it therefore advised to never use sanded grout on a polished marble. Test the grout in an inconspicuous area before a full application to ensure it will provide the expected results. Sealing sanded grout joints is recommended as it is very absorbent and can soak up moisture causing staining.

## Epoxy Grout

Epoxy grout is a waterless, two part grout made with epoxy resins (the base) and a hardener (the activator). With some epoxy grout products, the colour is a third addition. When fully cured, it forms an impermeable barrier to liquids that is stain and mildew resistant and doesn't require additional sealing of the joint, although it is still recommended. While more costly, challenging and messy to apply, epoxy grout is easy to clean and moisture resistant, making it low maintenance and a good option for use in kitchens and bathrooms.

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## Urethane Grout

A relatively new formula of grout in the market, comprised of a urethane based, premixed material that is ready to use and offers enhanced durability & flexibility. This formula requires no sealing and is resistant to stains, mildew and most household chemicals. It can be used indoors, outdoors and even in submerged applications. Urethane grout will cure to a very hard state with low shrinkage and high crack resistance. It will not dull or fade, the colour will remain intact for years to come. The premixed formulas are also easy to apply and low maintenance.

## Maintenance Tips:

- Thoroughly read & follow all manufacture warnings and instructions for all grouting products before use and test all materials in a small inconspicuous area before full application
- Select a grout with high colour consistency, and mix according to the manufacturer's instructions - improper mixing can lead to inconsistently-coloured grout lines
- Find a caulk that matches the grout colour – it's recommended to try match both products from the same manufacturer
- Grout takes several days to cure & set, once this is complete you will see the final colour
- Lighter-coloured grouts will show dirt and require more effort to maintain
- Clean the grout and tile as part of a regular maintenance routine
- Sealers can change the colour of the grout, always test before full application

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## Choosing Grout Colours

- The colour composition of the tile you've chosen will help you select a complimentary grout colour
- Decide if you want the grout colour to blend for subtlety, contrast for boldness or simply accent the tiles and overall look of the room
- Blending the grout will make the tile and grout joints less visible, to achieve this look, select a grout that is very similar to the tile colour
- Contrasting colours can create an intriguing patterned look and enhances the visibility of the tiles and grout joints; the greater the contrast the more noticeable the pattern will be
- When contrasting colours make sure to pick colours that complement each other
- For an accenting grout colour, pick up on colour tones from other elements in your design or space (i.e. wall colour, art, furniture, countertops); while this may be a trendy choice, it can require a lot of work to update should you choose a different accent colour at a later date

## Sealing Grout

While grout can be water-resistant, it is still susceptible to moisture absorption. It is recommended to seal grout to protect it from staining. A grout sealer can be easily applied to the grout joints once the grout has had enough time to cure and thoroughly dry. Ensure the grout sealer you are purchasing is compatible with the type of grout, tile and environment to which it is being applied.



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## Cleaning Grout

Routine grout cleaning can be done with a mild, pH neutral cleaning solution that is free of acid or bleach that will not affect existing sealers or coatings. For periodic deep cleaning of grout, a concentrated tile & grout cleaner can be used. Look for a cleaner that has non-polluting chemicals and low VOC levels. Ensure the cleaner is safe for use on your tile as well and capable of removing grease, soap scum, mildew and body oils. Always read and follow the instructions on the product label. Rinse the area with clear water and pat dry with a clean towel or sponge to remove any residue. Do not use acidic solutions / cleaners as part of a regular maintenance routine.

## Grout Repairs

Regularly inspect tiles and grout joints for any damage that may occur overtime.

Have any damage professionally repaired / replaced.

If repairing the damage yourself, be sure to wear work gloves and eye protection.

To repair a grout joint, use a grout saw, mechanical rotary tool or a hand tool, such as a chisel, to remove the grout in the damaged area. You will need to work carefully and slowly to prevent damaging surrounding tiles and grout joints. Once the grout has been removed, ensure the joint is clear of any debris and wiped clean with a dry cloth. The joint can then be re-grouted. Take caution to match the replacement grout texture and colour to the existing grout. Read and follow instructions on the product label. Ensure the grout has had enough time to cure before cleaning.

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## Grout Application

After the installation of the tiles, the next step is to grout the joints (this would be done after an initial sealer application for stone tiles). Select the appropriate grout for your project taking into consideration the type of tile, the location of the application and the size of the grout joint. If re-grouting, be sure to completely remove all of the old grout compound. Ensure that the thinset mortar has had enough time to cure completely and that the grout joints are free of any dust or debris as this may prevent the grout from bonding effectively.

Mix the grout according to the manufacturer's instructions, mixing in workable batches to prevent the compound from drying before it can be used. Apply the grout to the joints using a trowel. Holding a grout float at a 45 degree angle pull the grout in a diagonal direction pressing it into the joint. If grouting floor tiles, it is recommended to start in the corner furthest from the door way and work your way toward the door (don't corner yourself into the room). Do not grout the corners and edges as these should be caulked once the grout has cured.

Allow the grout to start to set as per the manufacturer's instructions and then clean off any excess grout from the surface of the tiles by gently wiping with a sponge and clear water in a circular motion. Ensure the sponge is thoroughly rinsed in clear water between each pass. Gently run a damp sponge along the grout joints to ensure they are smooth. Using a dry cloth, buff the tiles to polish. Cover the new installation with brown paper (craft paper or a similar colourless, absorbent product) to protect it from dust or debris allowing for the grout to cure completely and protecting the new tiled surface until any other construction is completed.

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