



PORCELAIN INSTALLATION GUIDE



Large Format Tile & Thin Porcelain Slab Panels

Raphael Porcelain large format tile has been around for some time but has exploded in popularity over the past few years. Traditionally, tiles came in a relatively standard size, such as 8" x 8" floor tiles and 4" x 4" wall tiles. Today, tiles are available from tiny glass mosaics that are 3/8" x 3/8" to large format thin porcelain tile panels that can be as large as 5' x 10'. Compared with standard tile installations, large format tiles present new challenges for tile installers. When installing large format tiles, specific procedures and methods must be adhered to so that the tile doesn't crack and leave behind a failed installation. Handling, lippage, subfloor preparation, mortar coverage, and curing/protection require extra consideration during large format tiles' installation process.

Thin Porcelain Tile ("TPT"). Raphael Porcelain large format tile panels, also called "thin tile" and "thin tile panels," are characterized by large panels up to 5' x 10' with a thickness of 6mm.

Advantages

For consumers, a large format tile is aesthetically pleasing within a wide variety of colors and designs available. As a design element, large format tiles can be used to make a smaller room appear bigger. Many people also enjoy the look of thin grout lines commonly used with large

format tiles. Additionally, because each tile offers more coverage per tile than traditionally sized tile, there are fewer grout lines. With fewer grout lines, maintenance becomes easier because a tile face is typically easier to clean than a grout line. As many of us know, even sealed or epoxy-based grout can be challenging to keep clean and looking its best.

Raphael Porcelain large format tile also offers some extended benefits. Raphael Porcelain tile products are easy to clean and offer scratch, fire-resistant, and waterproof surfaces.

Subfloor Preparation

With Raphael Porcelain large format tile, the subfloor or substrate must be properly prepared before laying any tile, and the larger the tile size, the more essential this becomes. It must be level and flat. Any dips or humps can lead to lippage that large format tile installations are prone to. Lippage is when one edge of a tile is not level with the adjacent tile's edge. This leads to the finished surface having an uneven appearance, degrades the quality of the installation,

Additionally, uneven surfaces will make it difficult to achieve the proper mortar coverage and bond, another important aspect of installing large format tile. Raphael Porcelain large format tiles, only LFT Thinset, are approved.

Variance in Substrate

With traditional tile that is less than 15" x 15", there can be up to a 1/4" variance in the substrate over a 10' span. For tile with at least one edge greater than 15", the American National Standards Institutes (ANSI) recommends a maximum variance of 1/8" over a 10' span and 1/16" over a 24" span. A 6-foot level or 10-foot straight edge can be used to measure variance in the substrate. Large format tiles will highlight any imperfections in the subfloor, so if the subfloor exceeds these specifications, the subfloor must be corrected with a self-leveling underlayment, patch, or grinding it down.

Self-leveling Underlayments

A self-leveling underlayment is a cement-based product that can be poured on the subfloor to fix small imperfections in the subfloor and even the surface. As it cures, the self-leveling underlayment produces a smooth and flat surface ready for tiling. For minor variances, a trowel applied self-leveling patch can be used to bring the substrate to tolerance. Patching compounds can also be used to fix small variances on walls as well. The industry recommends using substrate preparation products and installation products from the same manufacturer to ensure compatibility.

Mortar

Using the appropriate thin-set/mortar is very important for a successful installation. With traditionally sized tile installations, a thin-set is used to bond the tile to the substrate. With large format tiles that often have a 1/4" (6mm) thickness, regular thin-set can be problematic. For many large format tile installations, it is usually recommended to use a Large format tile thin-set.

Using an inadequate amount of mortar can lead to hollow spots. These hollow spots indicate that the tile is not fully supported, and the tile becomes susceptible to cracking and ore loosening at these points.

Mortars designed for Large format Tile (LFT) will support the tile without the tile slumping into the mortar. These mortars, however, can be difficult to trowel and work with in general. Newer types of high-performance medium-bed mortars are formulated to be lighter and much easier to trowel. When selecting a mortar, it is always advisable to consult the material manufacturer for mortar recommendations as not all mortars are suitable for every application.

Trowel Size

Complete mortar coverage is an essential part of Raphael Porcelain large format tile installations. Without the proper coverage, the tile and grout become susceptible to cracking along with a loss of bond to the tiles. To achieve full coverage, start by using the appropriate trowel and troweling technique. For many large format tile installations, a larger trowel such as 1/2" x 1/2" square notch or a 3/4" x 3/4" rounded notch will help attain adequate coverage. For larger tiles, a U-notch trowel may be necessary for correct coverage.

With a correct trowel, a proper setting bed will be produced to eliminate voids and reduce time spent resetting tiles that don't have full coverage. There is no exact standard for trowel size selection, so that that trowel size may vary for different jobs and substrates. However, the larger the tile size, the larger the trowel that is generally needed. For instance, a 1/2" x 1/2" square or round notch trowel is commonly used for tiles sized from 13" to 20" while a 3/4" x 3/4" rounded notch trowel is typically used for tiles larger than 20". For thin porcelain tile panels, a specialty euro/zipper trowel is often used to achieve full coverage.

Troweling Thinset

When applying the thinset to the substrate, the thinset should be combed in a linear, uniform direction. With the trowel held at a 45-degree angle, drag the trowel across the thinset in one direction leaving behind straight and full "ribbons" of thinset. Using straight trowel lines will also help prevent voids or air from becoming trapped between the tile and substrate for proper coverage and adhesion.

Back Buttering

While an LFT thinset will generally require proper coverage, back buttering also helps to achieve full coverage. Back buttering is the process of using the flat side of the trowel to apply a thin layer thinset or mortar to the back of the tile before setting it. This helps to fill any voids on the back of the tile. Back-buttering is especially important with natural stone products such as travertine, granite, marble, slate, etc. because of the naturally occurring spaces and imperfections on the back of the tile. By filling the spaces in with thinset before setting, weaker areas are strengthened, and better coverage is obtained.

For Raphael Porcelain thin panels, a different method is used for back buttering. Instead of using the trowel's flat side to produce an even flat coat on the back of the tile, the trowel's notched side is used to create the same ribbons of thinset as used on the substrate. These thinset ridges should be in a level line across the back of the panel and line up parallel with the substrate's ridges of thinset on the substrate. By troweling both the backside the panel the same as the substrate, 100% coverage can be achieved, which is essential for Raphael Porcelain thin panel installations' success.

Crack Isolation

Large format tiles are more susceptible to cracking than smaller sized tiles. Movement, along with tiny cracks in the subfloor, can transfer to the tile and result in cracks. Traditionally, reinforced mortar beds had been used to allow the substrate and tile covering to move independently of each other and prevent the transfer of cracks from the substrate to covering. However, reinforced mortar beds add significant additional height to the installation and aren't practical by today's new construction and remodeling standards.

Uncoupling membranes are designed to replace the traditional reinforced mortar beds without the addition of significant height. While each manufacturer will have its design, in general, uncoupling membranes are composed of a waffle-like grid structure with an anchoring fleece on one side, are lightweight, come in a roll, and are easy to install. Incorporating an uncoupling membrane or other crack isolation underlayment will help to prevent cracks from occurring.

Lippage

Even with a perfectly flat subfloor, lippage is still another concern for large format tile installations. Lippage occurs when the adjacent edges of the two tiles are not even. The bigger the tile, the more problematic lippage can become. Not only does lippage appear more prominent with larger size tiles, but it also presents a greater tripping hazard. Incorrect mortar bed, wrong setting techniques, and warpage can all lead to lippage.

With the correct setting, practices will help to prevent lippage. Another extremely valuable tool available today is tile leveling systems. Easy-to-use tile leveling systems will significantly help in creating lippage-free installations. These systems generally consist of a few components, including base/bottom plates, caps, straps, and installation gun and can be used for both floor and wall applications.

ON POLISHED TILE DO NOT USE THE SCREW DOWN SYSTEM

Tile Leveling System

The Tile leveling system is a 3 component tile leveling system including shim, horseshoe, and installation tool, and can be used with grout joints down to 1/32". For wider grout joints, common tile spaces can still be used with the leveling system. The small, square foot/bottom plate attached to each strap's end is slid under the edge of the tile 2 -3 inches from each corner. The cap then slides down over the strap and will sit on the top part of the tile. With the strap and cap in place, the Installation Tool is used to tighten the assembly, locking all the tiles in place for a level and flat surface.

Raphael Porcelain does not guarantee and does not take responsibility for the installation due to many variables. This is a general guide on how to handle the installation of the material.