

INSTALLING THIN (3-5 MM) PORCELAIN TILE

Thin porcelain tiles, also called panels, are gaining wide acceptance in ever-larger formats. These new porcelain panels appeal to designers because of their modern look. They are being used in a variety of installations, particularly in the remodeling of existing tile installation. Because these tiles are only 3-5 mm thick (1/8"-3/16"), they add very little height to the installation. They are ideal for new tile installations over well-bonded, existing ceramic tile. Available in most popular sizes, from one by two feet up to very large panels, they can significantly simplify maintenance of the tiled surface. Some of these panels are as large as five by 10 feet.

TCNA recognized these "Reduced Thickness Porcelain Tiles" in their 2013 Handbook. They note that these panels do not comply with ANSI A137.1 for porcelain tile and in particular they have a lower breaking strength. Because of this, the installer is cautioned that special handling and installation is required. TCNA recommends checking with the tile manufacturer for handling and installation methods. In many cases, specialized handling equipment is needed for moving the panels into place. There are also cutting tools that are specifically designed for cutting the larger panels.



Initially, the thin porcelain tile manufacturers recommended their use on interior and exterior walls only. Now, some manufacturers are also offering tiles that are suitable for interior floor applications. The products recommended for floors are generally thicker and may also be reinforced with a resin-bonded mesh fabric on the back that increases the breaking strength. Professionals should contact the tile manufacturer for the service rating of their tile before installation on floors.

It is advisable to consult an experienced installer before attempting the installation of thin tile. These installers will know how to use the specialized cutting equipment, trowels and other tools that makes the installation of these tiles faster and easier. Breakage can be expensive, so it is best to have an expert in thin tiles perform the installation.

One key to a successful installation of thin porcelain tile is the preparation of the surface. The surface must be flat and true. In many cases, TCNA guidelines for surface tolerance of large format tile (one side greater than 15") are acceptable. Custom Building Products agrees with the TCNA position and recommends maximum allowable variation of no more than 1/8" in 10' and 1/16" in 3', with no abrupt irregularities greater than 1/32". The use of a self-leveling underlayment is ideal for preparing a floor to meet the required flatness for thin tile.



Lippage is another concern, as the current TCNA guidelines allow up to 1/16" lippage between adjacent tiles. Because these tiles are so thin, this amount of lippage can represent 50% of the tile's thickness. A simple impact to the edge of a tile may cause the tile to chip and break. Therefore, CUSTOM recommends minimizing lippage to be no more than 1/32" to prevent damage to the tile, which may involve use of a commercial edge-leveling system. These mechanical clamps help to align the edges of the tile and in many cases reduce lippage to zero. For more information about edge-leveling systems, contact CUSTOM Technical Services.



Technical Bulletin
 Technical Services 800-282-8786
custombuildingproducts.com

INSTALLING THIN (3-5 MM) PORCELAIN TILE

Surface Preparation

CUSTOM offers several products to assist in preparing the surface to an acceptable tolerance.

- **CustomFloat® Bedding Mortar** allows for thick bed wall applications. This lightweight formula can be screed to a smooth flat surface with minimal effort.
- **Skim Coat & Patch Cement Underlayment** is a trowel-applied patching and smoothing compound that should be used to eliminate imperfections in walls and floors. It can be used to bring the surface into the acceptable tolerance.
- **LevelQuik® RS Rapid Setting Self-Leveling Underlayment** is ideal for smoothing floors to allowable variation in a short amount of time.
- **LevelLite® Self-Leveling Underlayment** can be applied up to 2" thick and its recycled content helps qualify for LEED certification.

Once the surface is properly smoothed, it may be necessary to waterproof or treat cracks in the substrate before the installation of the tile.

- **RedGard® Waterproofing and Crack Prevention Membrane** can be applied to a dry film thickness of 30 mils for general waterproofing and crack isolation.

Thin Tile Bonding

It is important to follow all TCNA recommendations for the installation of porcelain tile. To assure that the tiles do not crack from point load or impact, it is mandatory that the mortar coverage is greater than 95%, with no voids greater than two square inches, ensuring that all corners and edges are supported with mortar. You may want to consider a specialty notched trowel that was designed to maximize the coverage with less effort, such as CUSTOM SuperiorBilt® **Premium Notch Trowel**. It is important to apply mortar to both the surface of the substrate and the back of the tile. The trowel ridge line should be applied to these surfaces so they are parallel to each other when pressed into place. This will prevent trapping air under the tile and creating a void. To achieve continuous contact between the substrate and tiles, a paint roller or a rubber flooring roller may be



useful and should be worked from the center outward to the tile edges. Tile should be checked regularly to assure full coverage, with particular attention to the edges and corners. Exercise caution when checking these thin porcelain tiles for coverage as removing the thin tile can cause them to crack. The mortar installation instructions must be followed for cure time and allowable traffic.



Setting Materials

CUSTOM recommends the following mortars for the installation of thin porcelain tile.

- **ProLite® Large Format Tile & Stone Mortar** is ideal for installation on walls. Its non-sag formula will support these large tiles without mechanical assistance.
- **MegaLite® Crack Prevention Mortar** is a high-strength bonding mortar with exceptional non-sag characteristics. MegaLite's long working time makes it the product of choice for applications in hot, dry or windy conditions.
- **Complete Contact™-LFT Rapid Setting Fortified Mortar** is formulated for floor applications of large format porcelain panels, assuring full coverage of the back of the tile with minimal effort. The rapid setting feature allows for fast installation and quick return to service — an important feature for remodeling installations.

Some thin tiles have a reinforcing resin backing. In most cases, a modified cement mortar will not bond to the resin backing. We have found that some tile manufacturers have formulated the resin to allow bonding by premium modified cement mortars, such as **MegaLite Crack Prevention Mortar**. If in doubt as to which mortar to use with a resin backed tile, it is best to use an epoxy bonding mortar. Check with the tile manufacturer or CUSTOM Technical Services for recommendations for a particular resin-backed thin tile.

- **EBM-Lite™ Epoxy Bonding Mortar** or **CEG-Lite™ 100% Solids Commercial Epoxy Grout** is highly recommended when installing fiber mesh-reinforced, resin-backed thin porcelain tile.



CUSTOM®

Technical Bulletin

Technical Services 800-282-8786
 custombuildingproducts.com

INSTALLING THIN (3-5 MM) PORCELAIN TILE



Grouting

Since these tiles are so thin, it is important that the still-wet mortar is completely removed from the grout joint. The grout joints should be tooled or struck clean to the substrate during installation to maximize the

joint depth. Mortar left in the grout joint will reduce the grout thickness to less than 1/8" thick and can result in grout cracking. Many tile manufacturers recommend 1/16" grout joints for rectified thin tiles. It is important that these small joints are completely filled to maintain a durable grouted joint. The following grouts are recommended for use with the thin porcelain tile.

- **Fusion Pro® Single Component Grout™** is ready to use, easy to spread and clean, and offers unsurpassed stain resistance.
- **Polyblend® Grout** is available in 48 colors for joints greater than 1/8" wide and is ideal for most wall applications.
- **Prism® SureColor® Grout** is a fast-setting, high-strength grout that reduces efflorescence and grout shading for joints greater than 1/16".
- **CEG-Lite™ 100% Solids Commercial Epoxy Grout** produces the strongest joint and is preferred for floor applications. Epoxy grout should be used where stain and chemical resistance is critical.

It is important to observe all building codes and TCNA requirements for thin tile installation. It is vital that all movement joints are properly placed and filled with the appropriate soft jointing material, such as **CUSTOM Commercial 100% Silicone Caulk**. See the TCNA EJ171 Detail for proper placement and additional information. When tiles are 10 feet long, proper soft joint placement is every grout joint. In these cases, you may want to consider grouting the entire installation with silicone caulk for a uniform appearance.

For further information on the handling of these new thin porcelain tiles and larger panels, consult the tile manufacturer's website and remember — CUSTOM Technical Services is here to help with your installation.

The information in this bulletin is presented in good faith, but no warranty, express or implied, is given nor is freedom from any patent in as much as any assistance furnished by CUSTOM with reference to the safe use and disposal of its products provided without charge. Custom Building Products assumes no obligation or liability therefore, except to the extent that any such assistance shall be given in good faith.



Technical Bulletin

Technical Services 800-282-8786
custombuildingproducts.com