INSTALLING GAUGED (THIN) PORCELAIN TILE /PANELS/SLABS

Defining Gauged or Thin Tiles

Gauged (thin) porcelain tiles and panels/slabs appeal to architects and designers because of their modern aesthetic. They are being installed in a variety of interior and exterior applications, particularly in the remodeling of existing tile installations. Because these tiles are only 3.5 – 6.5 mm thick (1/8”-1/4”), they add very little additional height to the assembly. They are ideal for installing new tile over well-bonded, existing ceramic tile. Available in many popular sizes and shapes, up to very large 5’ x 10’ (1.5m x 3m) panels, this material can significantly ease maintenance of the tiled surface. Panels/Slabs are defined as greater than one square meter, otherwise they are considered tile.

These gauged panels comply with ANSI A137.3 standard. Because of the large size of these gauged panels/slabs, the installer is cautioned that special handling and installation is required. TCNA recommends checking with the tile manufacturer for handling, storage and shaping 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.

Gauged porcelain tile and panel/slub are supplied with a bare porcelain back or a back-layered reinforced resin backing. It is recommended that only tile or panel/slub with a thickness greater than 5 mm are installed on concrete floors; they are not recommended for direct bonding to wood substrates. Professionals should contact the tile manufacturer for the service rating of their gauged tile or panel/slub before installation on floors.

Where and How to Install Gauged Tile / Panels

Gauged porcelain tile and panels/slubs must be installed per ANSI A108.19 and the manufacturers’ directions.

It is advisable to have only industry certified or highly experienced installers attempt the installation of these gauged porcelain tiles and panels/slabs. Trained installers will know how to use the specialized cutting equipment, racks, trowels and other tools that make the installation of these tiles faster and easier. Breakage can be expensive, so it is best to have an expert with this material perform the installation.

One key to a successful installation of gauged porcelain tile and panels/slabs is the preparation of the surface. The surface must be flat and true. 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 2’, 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 ANSI A108.19 guidelines allow up to 1/32” lippage between adjacent tiles. This may require use of a mechanical lippage control system, ideally with a removable/replaceable cap to allow for tooling/cleaning during installation. These mechanical clamps help to align the edges of the tile and in many cases reduce lippage to zero. For more information about lippage control systems, contact CUSTOM Technical Services. Because these tile and panel/slub do not exhibit warpage, they can be offset in a brick pattern up to 50%.

Surface Preparation

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

- CustomFloat® Bedding Mortar and Quikrete Deck Mud allows for thick bed wall and floor applications. After placement, just screed to a smooth flat surface.

- 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 leveling floors to allowable variation in a short amount of time. It can be poured up to 1 1/2” thick.

- LevelLite® Self-Leveling Underlayment can be applied up to 2” thick and its recycled content can contribute points towards 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 15 mils for general waterproofing and crack isolation.

**Gauged Porcelain Bonding**

It is important to follow ANSI A108.19 and 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 80% for interior walls, 85% for interior floors and 95% for exterior and wet area installations, with no voids greater than two square inches, ensuring that all corners and edges are fully (100%) 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’s SuperiorBill® Premium Notch Trowel.

Apply mortar to both the surface of the substrate and the back of the tile/panel. The trowel ridge lines should be applied to these surfaces so they are parallel to the short side of the panel/slab and 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 panels, a padded, high-speed orbital sander with a soft bonnet can be pressed against the gauged tile or panel/slab. On walls, apply pressure and work from center outward to the tile edges. On floors, you can walk on the panel in a shuffling action from the center towards the perimeter of the panel to force air out from under the tile. Use the orbital sander to consolidate bonding mortar where tiles meet while mortar is wet in partnership with the mechanical lipage control system.

The tile or panel/slab should be checked regularly to assure full mortar coverage, with particular attention to the edges and corners. Exercise caution when checking these tiles for coverage as removal can cause them to crack. The mortar installation instructions must be followed for cure time and allowable traffic.

**Setting Materials are Determined by Backing Materials**

CUSTOM recommends the following mortars for the installation of gauged porcelain tile and panel/slab.

Some gauged porcelain tile and panels/slabs have a back-layered reinforcing resin and fabric mesh. CUSTOM has found that back-layered gauged porcelain tile and panel/slabs manufactured by the following companies have formulated the resin to allow installation with MegaLite® or ProLite® tile mortars:

- **DalTile SlimLite™ Porcelain Panels**
- **Crossville Laminam®**
- **Florida Tile THINNER**
- **Kerlite by COTTO D’ESTE**

Other back-layered gauged porcelain tile and panel/slab should be installed with EBM-Lite™ Epoxy Bonding Mortar or evaluated in our lab for suitability with a cement based mortar. Check with the tile manufacturer or CUSTOM Technical Services for updates to our installation recommendations.

Gauged porcelain tile and panels/slabs with a bare porcelain backing can be successfully installed with MegaLite®, ProLite® or Complete Contact™-LFT Mortar. Complete Contact is of particular use in achieving the proper coverage on floors. Its unique, flowable properties help fill voids in the mortar as the tile or panel/slab is being embedded. In addition to the manufacturers above, these manufacturers have gauged porcelain tile and panels/slabs with bare porcelain backing tested by CUSTOM.

- **Emser Tile Expanse™**
- **StonePeak Plane**
recommended CUSTOM Dry Set Mortars

- **MegaLite® Ultimate Crack Prevention Large Format Tile 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.

- **Prolite® Premium Large Format Tile & Stone Mortar** is ideal for installation on walls. Its non-sag formula supports large tiles without mechanical fasteners.

- **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.

- **EBM-Lite™ Epoxy Bonding Mortar or CEG-Lite™ 100% Solids Commercial Epoxy Grout** is highly recommended when installing back-layered reinforced resin gauged porcelain tile/panel.

Grouting

Grouting should proceed per ANSI A108.10 or A108.6. ANSI A108.19 recommends that the width of the grout joints be no less than 1/16". Check with the gauged tile or panel/slab manufacturer and your installer for the appropriate grout joint width for your project. 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. 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 gauged porcelain tile and panel/slab.

- **Fusion Pro® Single Component Grout** is ready to use, easy to spread and clean, and offers unsurpassed stain resistance. Fusion Pro is guaranteed stain-proof and color perfect.

- **Prism® Color Consistent 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.

Consider the use of an Aqua Mix® grout release or sealer to avoid potential grout “picture” framing if only spreading grout at the edges of very large tiles such as these panels.

It is important to observe all building codes and TCNA requirements for tile installation. It is vital that all movement joints are no less than 1/8" wide, properly placed and filled with the appropriate soft jointing material, such as CUSTOM Commercial 100% Silicone Sealant. See TCNA EJ171 for proper placement and additional movement joint information. It is the responsibility of the design profession or engineer to determine the location of movement joints. When tiles are 10 feet long, proper soft joint placement may be at every grout joint. In these cases, you may want to consider grouting the entire installation with silicone sealant for a uniform appearance.

For further information on the handling of these gauged porcelain tile and panel/slab, consult the tile manufacturer’s website and contact CUSTOM Technical Services.

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