Defining Gauged or Thin Tiles
Gauged or thin porcelain tiles, panels or 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 new tile installations 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.

TCNA now recognizes these gauged, thin, porcelain tiles/panels. They note that these panels do not comply with current ANSI standards and they are in the process of developing both product and installation standards. 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.

Gauged porcelain tile/panels are supplied with a bare porcelain back or a back-layered reinforced resin backing. It is recommended that only the tile/panels 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 before installation on floors.

Where and How to Install Gauged Tile / Panels
It is advisable to have only industry certified or highly experienced installers attempt the installation of these gauged porcelain tiles/panels. 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 gauged porcelain tile/panels perform the installation.

One key to a successful installation of gauged porcelain tile/panels 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 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 current TCNA guidelines allow up to 1/16" lippage between adjacent tiles. Because these tile/panels are so thin, this amount of lippage can represent 50% of the tile’s thickness. A simple impact to the edge of a tile/panel may cause it to chip and break. Therefore, CUSTOM recommends minimizing lippage of no more than 1/32" to prevent damage to the tile.

This may require 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. Because gauged porcelain tile/panels 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.
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- **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 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 15 mils for general waterproofing and crack isolation.

Gauged Porcelain Tile/Panel 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 80% for interior walls and 95% for exterior and floor installations, with no voids greater than two square inches, ensuring that all corners and edges are fully 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.

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 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 padded, high-speed orbital sander can be pressed against the tile surface. Apply pressure and work from center outward to the tile edges. Floor tile/panels can also be embedded by walking on them with a shuffling motion, starting in the center and walking to the edges.

The tile/panel 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/panels.

Some gauged porcelain tile/panels have a back-layered reinforcing resin and fabric mesh. CUSTOM has found that back-layered gauged porcelain tile/panels manufactured by the following companies have formulated the resin to allow installation with our premium MegaLite® Crack Prevention Mortar.

- DalTile SlimLite™ Porcelain Panels
- Crossville Laminam®
- Florida Tile THINNER

Other back-layered gauged porcelain tile/panels should be installed with CUSTOM 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/panels 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/panel is being embedded. In addition to the manufacturers above, these manufacturers have gauged porcelain tile/panels with bare porcelain backing tested by CUSTOM.

- Emser Tile Expanse™
- StonePeak Plane
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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.

The following grouts are recommended for use with the thin porcelain tile/panels.

- **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 thin tile installation. It is vital that all movement joints are be 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 gauged porcelain tile/panels and all larger panels, consult the tile manufacturer’s website and contact CUSTOM Technical Services.

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