# GAUGED PORCELAIN TILE AND GAUGED PORCELAIN TILE PANELS/SLABS INSTALLATION GUIDE



#### INTRODUCTION

GPTP/Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs are manufactured differently than conventional ceramic tiles and therefore have their own unique American National Standards Institute Material Standard - ANSI A 137.3. The standard provides specification requirements for these products which are suitable for interior and exterior applications.

# **Custom® Building Products Installation Systems**

See Product Technical Data Sheet for appropriate use and consult your local CUSTOM Building Products professional for systems specifications and warranty programs for your project.

### **Engineered Patching Materials**

- Silk™ Patching & Finishing Compound
- TechPatch™ MP Multipurpose Rapid Setting Skim Coat & Floor Patch
- TechPatch™ RP Ramping Patch
- TechPatch™ TW Tilt Wall Finishing Compound

### Self-Leveling Underlayments & Primers

- TechPrime™ A Acrylic Primer
- TechPrime™ E 100% Solids Epoxy Primer
- CustomTech™ TechLevel™ Self-Leveling Underlayments\*
- LevelQuik® Self-Leveling Underlayments\*

\*see Technical Data Sheets for details on best performance.

Surface Primer [over existing and difficult to bond to surfaces]

• MBP Multi-Surface Bonding Primer

#### Membranes

 RedGard® Waterproofing and Crack Prevention Membrane

### **Bonding Mortars**

- MegaLite<sup>®</sup> Ultimate Crack Prevention Large Format Tile Mortar
- ProLite® Premium Large Format Tile Mortar

### **Grout Products**

- Prism® Ultimate Performance Cement Grout
- Fusion Pro® Single Component® Grout
- Fusion Pro® Single Component® Grout Designer Series
- CEG-Lite<sup>™</sup> 100% Solids Commercial Epoxy Grout

### **Sealant Products**

Commercial 100% Silicone Sealant

#### **Care & Maintenance Products**

• All suitable AQUA MIX® products are recommended



Install per American National Standards Institute's (ANSI) ANSI A108.19 (Interior Installations) and/or ANSI A108.20 (Exterior Installation) of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Improved Modified Dry-Set Cement Mortar.

**NOTE:** It is strongly encouraged to purchase a copy of the ANSI Standard, which can be found at www.webstore.ansi.org

- GPTP/ Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs (≥ 5.6 mm) can be direct bonded to clean, sound, dimensionally stable concrete interior floors.
- They can be installed over other interior substrates supported by wood framing, per Tile Council of North America/TCNA Handbook for Ceramic, Glass and Stone Installation Methods F250-Stone, F141-Stone, RH141-Stone. Consult the tile and setting material manufacturers for their specific recommendations. (A108.19)
- Over existing surfaces, like existing tile, millwork, etc.
- Interior floors, walls, ceilings and countertops
- Exterior walls (Please refer to CUSTOM's exterior direct-adhered guidelines)

NOTE: TCNA Handbook can be purchased at www.tcnatile.com





### **SECTION 2**

# INSTALLING CONTRACTOR QUALIFICATIONS/REQUIREMENTS (ANSI A108.19, Section 10 and/or ANSI A108.20, Section 9)

Due to the unique characteristics and unconventional installation techniques required using gauged porcelain tile/tile panels/slabs, this work requires installers who are equipped with the proper tools and have acquired sufficient product knowledge and installation experience through the completion of an Installer Qualification Program.

Installers must complete one of the following programs:

- Advanced Certification for Tile Installers (ACT) program for gauged porcelain tiles and gauged porcelain tile panels/slabs (www.tilecertifications.com).
- Complete a comprehensive installation program provided by the manufacturer of gauged porcelain tile/tile panels/slabs. Complete a comprehensive installation program provided by the manufacturer of setting materials for gauged porcelain tile/tile panels/slabs.
- International Union of Bricklayers and Allied Craft workers / IMTEF Gauged Porcelain Tile/ Gauged Porcelain Tile Panel/Slab program (www.imtef.org) Complete other approved certification or installation programs that provide in-depth training per ANSI A108.19.





# **SECTION 3**

### PRODUCT SHIPPING AND PACKING SPECIFICATIONS

Gauged Porcelain Tile Panels are shipped by different methods and containers depending on the manufacturer. They are typically placed on a wooden, flat crate or wooden A-frame. It is critical to follow the panel/slab manufacturer's guidelines for handling with appropriate forklifts, pallet jacks, etc. to avoid breakage.

When offloading or loading A-frames, an Abaco glass lifter attached to a boom on a forklift or indoor crane is recommended. You should never attempt to lift or move porcelain panels with granite clamps. Additionally, individual panels can be moved manually using a Monolith, ETM suction cup grip rack and/or the Raimondi Easy Move rack.





### HANDLING AND STORAGE (ANSI A108.19/20, Section 7 & 8)

Due to the large formats, a minimum of two installers are needed to handle the porcelain panels. Grip gloves and safety glasses are needed when manually lifting and moving the panels. We recommend the use of quality pump suction cups or pump suction cup racks to secure the panels and prevent potential damage.

- Plan your storage per ANSI A108.19 Store and handle materials in a manner to prevent damage or contamination by water, freezing, or foreign matter.
- Allocate a large staging area to facilitate your work.
- Provide clear pathways when material needs to be moved, such as between the initial storage/staging area to the installation area and/or between the workstation and installation area.







# **SECTION 5**

### INSTALLATION GENERAL REQUIREMENTS (ANSI A108.19, Section 11 / A108.20, Section 10)

- Prior to starting a project with GPTP/Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs, the tile
  contractor must inspect all surfaces to receive tile and accessories. The tile contractor must notify in writing
  the architect, general contractor or other designated authority of any visually obvious defects or conditions that
  will prevent satisfactory installation of gauged porcelain tile/tile panels/slabs. Installation may not proceed until
  satisfactory conditions have been provided.
- Not all compressible membranes can be used with these tiles/panels when they will be subjected to heavy
  rolling loads or concentrated point loads. Design professionals or building owners should consult the product
  |manufacturers for recommendations.
- Steel wheels or heavy equipment rolling loads cannot be used over installed GPTP/Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs. Consult manufacture for installation recommendations for applications where dynamic loading and/or hard rubber wheel rolling loads are anticipated.

### **SECTION 6**

### SUBSTRATE REQUIREMENTS FOR WALLS AND CEILINGS (ANSI A108.19/20, Section 1)

Directly bonded to:

- Cementitious backer units, fiber-cement backer board, glass mat water-resistant gypsum backer board, gypsum board/drywall in dry areas.
- Clean, sound, dimensionally stable concrete walls and ceilings.
- Clean, sound, dimensionally stable walls constructed of concrete masonry.
- Cured mortar beds
- Existing sound and stable ceramic tile

### SUBSTRATE REQUIREMENTS FOR FLOORS (ANSI A108.19, Section 2, only)

Directly bonded to:

- Clean, sound, dimensionally stable concrete floors
- Cured bonded and non-bonded mortar beds. Mortar beds must conform to mortar bed requirements ANSI A-108.1B
- Properly prepared existing surfaces/substrates
- Additionally, gauged porcelain tile/tile panels/slabs may be installed over wood frame floor systems according to TCNA
   Handbook Method F-250 Stone. Consult panel/slab and setting material manufacturers for their recommendations/approval.

# **SECTION 8**

### EXISTING SURFACES/SUBSTRATES (ANSI A108.19, Section 3 / A108.20, Section 2)

- GPTP/Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs are ideal for installation over many different types of existing surfaces.
- Stability, soundness and suitability of existing surfaces should be determined by the owner, architect or owner.
- CUSTOM MBP Multi-Surface Bonding Primer is recommended for installations over existing surfaces in intermittently wet and dry areas.
   For continuously wet area consult CUSTOM Technical services for appropriate products specification.



### **SECTION 9**

# GENERAL SUBSTRATE REQUIREMENTS (ANSI A108.19, Section 5 and 6 / A108.20, Section 4 and 5)

Substrate Flatness: Maximum allowable variation in flatness for ALL surfaces to receive gauged porcelain tile panels is 1/8th inch in 10 feet (3.2mm in 3m) and 1/16th inch in 2 feet (1.6mm in 0.6m) from the required plane when measured from the high points in the surface. Substrates not meeting these criteria must be corrected before the installation can begin. If the substrate does not meet this requirement, the general contractor/owner is required to provide a separate bid to bring the substrate into tolerance.

Caution: Wood-based panels such as plywood, particle board, composite panels and non-veneer panels expand and contract with changes in moisture content and should not be used as backing materials for direct bond of porcelain panels. Consult with setting material manufacturer for possible alternatives.

### **SECTION 10**

# INSTALLATION RECOMMENDATIONS Equipment/Tools

- · Safety glasses
- Rubber grip gloves
- Rail Cutters gauged porcelain panels can be scored and cut with European Tile Masters (ETM) Rail Cutter, Montolit Flash Line, or Raimondi Raizor Rail Cutter.
- Worktable The recommended worktable for porcelain panels is the ETM-Table
- Grip Rack like the ETM-Grip (9 suction cup rack) and the Raimondi Easy Move Full Frame rack
- Trowels the ETM-Euro Trowel or SuperiorBilt®
   Premium Notch Trowel for wall or floor applications.
   See manufacturer for appropriate notch size for floors and walls.

- Vibratory and De-Airing Tools Raimondi beat in paddle, Raimondi Volpino electronic vibrating tool or electric palm sander with cotton bonnet to prevent marring and scratching.
- Right angle grinder for L-cuts and electric box, ETM plunge cutter or Raimondi Power Raizor cutter
- Diamond Blade 4" continuous rim diamond blade
- Hole Saw Diamond hole saw set
- ETM Drill Guide Kit
- Lippage control devices ETM, MLT lippage control or Raimondi
- Diamond sanding pad like ETM 4-sided block w/multiple grits or Raimondi Diamond Pads
- Hand pump suction cups like ETM pump suction cups or Raimondi
- GPTP Transport device
- AQUA MIX® Microfiber towels

### STORAGE AND HANDLING (ANSI A108.19, Section 7 & 8 / A108.20, Section 6 & 7)

### Moving the panels

Always clean dust etc. from panels with dry microfiber towels before moving, do not use chemicals that leave a
residue. Clean before moving every time to prevent jobsite and airborne dust build up that may prevent adequate
suction bond to panels.





 A minimum of two installers are needed to handle the porcelain panels, due to the large size. Grip gloves and safety glasses are needed when manually lifting and moving the panels. We recommend the use of quality pump suction cups or pump suction cup racks to secure the panels and prevent potential damage.

### Storing the panels

- Plan your storage per ANSI A108.19 Store and handle materials in a manner to prevent damage or contamination by water, freezing or foreign matter.
- Determine and schedule a large staging area and fabrication workstation.
- Provisions for clear pathways when material needs to be moved, such as between the initial storage/staging
  area to the installation area and/or between the fabrication workstation and installation area.

# **SECTION 12**

### **CUTTING AND FABRICATING PANELS**

- Clean the surface of the porcelain panels before cutting. Have a supply of microfiber towels on hand.
- Using the rail cutter, always score the porcelain panel surface in a continuous motion, from end to end. Follow manufacturer's instructions as some require a back-scoring motion to start.
- After scoring the panel, disconnect the pumps and slide the rail cutter out of the way.
- Use the two pump suction cups to slide the panel over the edge of the cutting table.
- Use the ETM-Snap or Raimondi pliers to crimp the score mark on each end of the panel. After crimping, slide the panel back so the score line is within a 1/8th of an inch of the edge of the cutting table.
- Use the ETM-breaker to separate the cut from the balance of the panel.
- Use the diamond block to smooth the cut edge and remove any burs that might be present.
- In order the minimize dust and extend the life of the block, it is recommended that you dip the cutting block in water each time you use it.





### DRILLING-ELECTRICAL BOX CUT-OUTS AND PLUMPING FIXTURES

- For electrical box cut-outs, the first step is to cut 4 pilot holes in each corner of the box. The holes will relieve surface tension and pressure when the straight cuts are done.
- Using the right-angle grinder with water, cut diagonally from corner to corner.
- Use the Raimondi Raizor grinder or the ETM plunge cutter to cut out the triangles.
- For plumbing fixtures and water pipes, use the appropriate diameter drill bit and the ETM Drill Guide Kit.
- Optionally, when possible, mark the face of the panel requiring cutting, install panel and wait until the next day to cut opening(s) as needed, this eliminates any stress that may occur during moving/installation of the panel.

# **SECTION 14**

### MOVING/STAGING PANELS FOR INSTALLATION

- Place suction cup rack on panel so the panel will not touch the ground during movement and installation.
- Use 2 to 4 sawhorses for supporting the suction cup rack with the panel attached in order to clean back of panel and apply bonding mortar/adhesive.
- Stage sawhorses/panel as close to the installation area as possible.







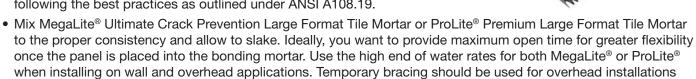


### **SECTION 15**

### APPLICATION OF BONDING MORTAR (ANSI A108.19, Section 13 / A108.20, Section 12)

- Use CUSTOM's SUPERIORBILT® Premium Notch Trowels designed to promote bonding mortar ridge collapse under LHT/LFT and GPTP.
- Clean substrate and back of tile/panel with a damp cloth or sponge to remove factory, transportation and site dust or residue before applying bonding mortar.
- The standard requires edge-to-edge coverage which can only be achieved by following the best practices as outlined under ANSI A108.19.

until overnight or until bonding mortar has reached initial cure.



- In order to prevent rapid dehydration of the water in the bonding mortar and reduce the potential of skinning over of the bonding mortar, it is recommended to use a sponge or garden sprayer to apply water to the substrate. Allow the water to dry on the surface yet remain wet in the substrate; this is called SSD/Surface Saturated Dry.
- Optionally, because SSD can be difficult and sometimes impossible to execute best practice is to apply RedGard® Waterproofing and Crack Prevention Membrane liquid applied waterproofing membrane to the substrate effectively closing off the substrate completely from any absorption of the water in the bonding mortar.











• Using the flat side of trowel, key in the bonding mortar into both the substrate and the back of porcelain panels.

**NOTE:** It is best to have wall/floor panel and substrate mortar application done simultaneously so they are finished at the same time. The goal is wet bonding mortar transfer during panel placement.

• Apply bonding mortar using the notched side of the trowel in one direction. Bonding mortar ridges must be parallel to each other, combing at right angles (perpendicular) to the short side of the tile/panel.









- Overspread the bonding mortar by at least an inch wider than the panel you plan to embed on the substrate. This will ensure full support of the mortar around all the tile edges and will help to eliminate the potential for lippage between panels.
- Bonding mortar ridges must be parallel to each other, combing at right angles (perpendicular) to the short side of the tile/panel.
- The key is to embed the tile/ panel into the bonding mortar within 20 minutes of application to prevent bonding mortar from drying out/skinning over.
- The minimum bonding mortar layer thickness on floors and wall is no less than 3/16th inch (4.8mm).

# **SECTION 16**

### WALL INSTALLATION

• Use the pump suction cupped frame to place the porcelain panel with bonding mortar applied onto the substrate and position prior to its removal. Minimize adjustment/shifting during panel placement.





- Use a Raimondi beat-in paddle or rigid grout float to tap the centerline of the porcelain panel along the entire length prior to removing the suction cup frame.
- Once the suction cup frame is removed, use a high-speed orbital sander soft protective cover/pad, Montolit Battile
  or Raimondi Volpino vibrating tool with pad to vibrate the surface from the center outward to the edges. This will
  collapse the ridges, force air from behind the panels and maximize edge-to-edge bonding mortar coverage.









When installing more than one porcelain panel, lippage control devices are required to eliminate lippage between
the panels. Lippage control systems are for fine tuning the lippage between the edges. The key alignment of edges
is accomplished through proper bonding mortar application and embedding techniques.

NOTE: Allowable lippage is only 1/32".







- After the first panel has been installed and the bonding mortar has been spread for the second panel, place
  the lippage control straps along the edge of the first panel approximately two inches from the corner and
  approximately every 12-14 inches along the length.
- Once the second panel is in place, follow the same embedding procedure described above and insert the appropriate grout joint spacer and lippage control cap or wedge.

**NOTE:** Recommendation — DO NOT USE the Lippage Control straps as spacers, this will cause damage during cap/wedge and strap removal the following day.





• Cinch down on the lippage control cap or wedge to bring the adjoining tile edges into alignment.







- Using a high-speed orbital sander with pad, Montolit Battile or Raimondi Volpino vibration tool, work the edges of the panel and between each of the lippage control strap, caps or wedges. Some additional tightening may be necessary. The combined vibration and cap tightening increases bonding mortar coverage along the edge of the panel.
- When cleaning excess bonding mortar from the substrate, make sure to leave the notch gaps open at the edge of the panel. By cutting the bonding mortar in a straight vertical direction, then pulling away from the panel edge, keep the ridges open to allow for proper bonding mortar collapse/de-airing during second panel placement's joint treatment.





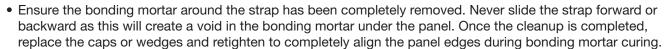


Panel surface and joint cleanup: Remove excess bonding mortar from the panel surface and joints immediately
after installation with a wet sponge or wet micro-fiber cloth. Clean out the joints to the full depth of the tile/panel
before bonding mortar sets up.

**Tip:** A toothbrush, lippage control strap or a joint spacer can be used to scrape out the joints and prevent scratching the panel.







When stopping a day's work that will continue the next day, the most critical step is to make sure the last panel
installed is completely embedded and is checked for flatness across the surface before leaving for the day.
 Consult with the setting material manufacturer and the lippage control supplier on how best to end one day's
work that will continue into new panel installation the next day.







- Grout application types and times will vary from 24-72 hours. Please refer to the specific product per manufacturer's recommendations.
- Prior to grouting, remove lippage control devices according to manufacturer's recommendations, clean out joints with a damp sponge to remove any residue leftover from lippage control straps.
- 1/16-inch (2 mm) to 1/8-inch (3 mm) grout joint width is recommended for interior wall installations. All grout joint sizes should be approved by the design professional in relationship to the application and location within each project. All grout types and appropriate silicone sealant materials are acceptable.

# **SECTION 17**

### **FLOOR INSTALLATION**

• Use the pump suction cupped frame to place the porcelain panel with bonding mortar applied onto the substrate and position prior to its removal. Minimize adjustment/shifting during panel placement.







- The most efficient way to remove entrapped air under the panel, eliminate voids and gain edge to edge bonding mortar coverage is to use the walking pattern illustrated in ANSI A108.19/20 and the CUSTOM Building Products GPTP/Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Floor Installation video. This step is critical and must be executed per the process. This step is critical and must be executed per the process.
- Immediately after setting the panel into place, Step into the center of the porcelain panel, bend over and release the pump suction cups making sure to walk in a straight line down the middle of the panel only. Then, step off the panel and remove the grip rack from the panel.
- Step back into the center of the panel and walk with shuffling steps the entire length of the panel. Return to the center of the panel, and in shuffling steps, walk-side to-side across the width, compressing the bonding mortar ridges allowing the air to escape. Until you've covered the entire panel from end to each.

### **Custom Building Products Installation Video Excerpts**

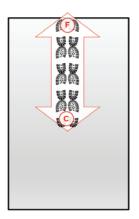


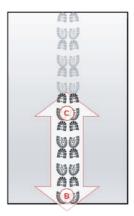




### • GPTP FLOOR / Walking Pattern

NOTE: DO NOT step on edges of tiles/panels, stop 2-3 inches short from edges of panels that will have adjoining tiles/panels. Use the Orbital, padded sander to work mortar coverage at edges and eliminate lippage between the tile/panels once the second/adjoining tile/panel has been set.











1. C (center) to F (front) to C (center), 2. C (center) to B (back) to C center. 3. C (center) to L (left) to R (right) Do not step off of tile.

Do not step off of tile.

to C (center). Do not step off of tile 4. C (center) to L (left) to R (right) to C (center). Do not step off of tile.

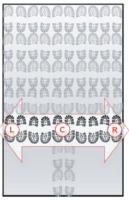
5. C (center) to L (left) to R (right) to C (center). Do not step off of tile.



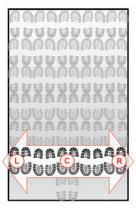
6. C (center) to L (left) to R (right) to C (center). Do not step off of tile.



7. C (center) to L (left) to R (right) to C (center). Do not step off of tile.



8. C (center) to L (left) to R (right) to C (center). Do not step off of tile



9. C (center) to L (left) to R (right) to C (center). Do not step off of tile.



10. C (center) to L (left) to R (right) to C (center). Do not step off of tile.

- When installing more than one porcelain panel, lippage control devices are required to eliminate lippage between
  the panels. Lippage control systems are for fine tuning the lippage between the edges. The key alignment of edges
  is accomplished through proper bonding mortar application and embedding techniques.
- After the first panel has been installed and the bonding mortar has been spread for the second adjoining panel, place the lippage control straps along the edge of the first panel approximately two inches from the corner and approximately every 12-14 inches along the length.
- Once the second panel is in place, follow the same embedding procedure described above [in video] and insert the appropriate grout joint spacer and lippage control cap or wedge.
- Cinch down on the lippage control cap or wedge to bring the adjoining tile edges into alignment.
- Using a high-speed orbital sander with soft pad, Montolit Battile or Raimondi Volpino vibration tool, work the
  edges of the panel and between each of the lippage control straps, caps or wedges. Some additional tightening
  may be necessary. The combined vibration and cap tightening increases bonding mortar coverage along the
  edge of the panel and helps in elevation alignment between panels.







- NOTE: Due to panel sizes, pattern layout and jobsite room sizes it may be necessary to work on freshly set
  panels. In these situations, immediately after embedding the panel place non-staining kraft paper to protect
  the panel from scratching and use minimum 1/2" thick board protection materials such as plywood, masonite
  or other to disperse the weight load. DO NOT WORK on freshly bedded panels for more than 60 minutes after
  installation. Immediately after work completion on panel, remove board protection and paper to allow proper
  cure of setting materials.
- When cleaning excess bonding mortar from the substrate, make sure to leave the notch gaps open at the edge of the panel. By cutting the bonding mortar in a straight vertical direction, then pulling away from the panel edge, you keep the ridges open to allow for proper bonding mortar collapse/de-airing. [see walls section 15 above]
- Panel surface and joint cleanup: remove excess bonding mortar from the panel surface and joints immediately
  after installation with a wet sponge or wet micro-fiber cloth. Clean out the joints to the full depth of 6mm panel
  before bonding mortar sets up.
  - **TIP:** A toothbrush, lippage control strap or a joint spacer can be used to scrape out the bonding mortar in the joints and prevent scratching the panel. [see walls section 15 above]
- Ensure the bonding mortar around the strap has been removed. Never slide the strap forward or backward as this will create a void in the bonding mortar under the panel. Once the cleanup is completed, replace the caps or wedges and retighten to completely align the panel edges.
- When stopping a day's work that will continuing the next day, the most critical step is to make sure the last panel installed is completely embedded and is checked for flatness across the surface before leaving for the day, ensuring the elevation will align with the new panel installation the following day(s). Grout application types and times will vary from 24-72 hours. Consult with the setting material manufacturer and the lippage control supplier on how best to end one day's work that will continue into new panel installation the next day. [see walls section 15 above]
- Prior to grouting, remove lippage control devices according to manufacturer's recommendations, clean out joints with a damp sponge to remove any residue leftover from straps, being careful not to flood the joint with water.



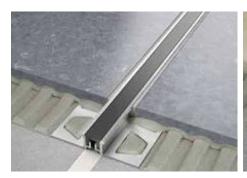




• Minimum joint size requirement for floors is 1/8-inch. All joints should be full and flush to minimize point-load impact and eliminate potential lippage from low joints. Refer to the Technical Data Sheet for each Custom Building Product used within the GPTP assembly for curing times.

### **EDGE TREATMENTS**

• Profiles for movement joints, corners, and edges can be used to complete the installation project. See manufacturer's recommendation for appropriate products to be specified.







# **SECTION 19**

### **MOVEMENT JOINTS**

- It is important to observe all building codes, ANSI and TCNA requirements for tile/panel installations. It is vital that all movement joints are included in design and properly placed/filled with the appropriate soft jointing materials, such as Custom Building Products Commercial 100% Silicone Sealant. See TCNA EJ171 details for proper placement and additional movement joint information.
- When using in full format, proper soft joint placement may be at every grout joint. In these cases, you may consider grouting the entire installation with silicone sealant for a uniform appearance.
  - Commercial 100% Silicone Sealant meets the requirements of The Tile Council of North America's Detail EJ171 for use in movement joint panels.

### For additional information: Visit www.CustomBuildingProducts.com or call 800-282-8786

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