



PAPER-FACED MOSAIC INSTALLATION INSTRUCTION

These instructions are provided as a general guideline for the installation of paper-faced mosaic cast glass tile. An experienced, professional tile installer, who has read and understands these instructions, should perform the work. Some installations require a more detailed specification. **Please refer to the TCNA Handbook for Ceramic, Glass, and Stone Tile Installation for additional details.**

MATERIAL INSPECTION

These cast glass tile products are handmade.

Variation in color, shade, tone and size is normal. In many cases, there will be folds, wrinkles and bubbles in the glass. These surface characteristics are inherent to the cast glass manufacturing process and should be expected. Upon delivery open and inspect each box of tile. The owner or owner's representative is responsible for determining the acceptability of the product prior to installation as well as approve the first five square feet of installed tile prior to the tile installer proceeding with the installation.

- **Mosaic tile** - verify sheet-to-sheet color consistency by first comparing each sheet, from the backside, to one another. Next, compare the face of the sheets by laying them adjacent to one another and comparing the visible portion (edge) of the mosaic tiles.

No adjustments will be made after installation.

SUBSTRATE PREPARATION

In general, there are four types of acceptable substrates for Glass Tile products:

- Concrete - Cured a minimum of 28 days, may require additional surface preparation
- Cement Mortar - Cured a minimum of 7 days
 - Walls: Two-coat cement mortar bed reinforced with 2.5lb galvanized metal lath
 - Floors: Wire reinforced cement mortar bed over membrane or bonded cement mortar bed
- Cement Backer Board (CBU) - Durock, Fiberock, Hardibacker, PermaBase, Wonderboard
- Drywall - Dry locations only

The tile installation's substructure, location and substrate type (i.e. CBU or concrete) will influence the details of how the substrate should be prepared. The following substrate preparation methods are detailed in the Tile Council of North America's "TCNA Handbook for Ceramic, Glass, and Stone Tile Installation" and are organized by alphanumeric designation (i.e. W244C). Use the following chart to identify which TCNA method is appropriate for your installation and refer to the current edition of the TCNA Handbook for details. The TCNA handbook is available for purchase at www.tcnatile.com.

FLOORS	INTERIOR			EXTERIOR		
	Backer Board	Mortar	Concrete	Backer Board	Mortar	Concrete
Wood Sub-Floor	F144	F145 F141	NA	N/A	N/A	N/A
Concrete (Slab on Grade)	N/A	F111 F112	F113	N/A	F121 ¹	F102
Concrete (Elevated or Post-Tensioned)	N/A	F111	N/A	N/A	F121 ¹	N/A

WALLS	INTERIOR			EXTERIOR		
	Backer Board	Mortar	Concrete	Backer Board	Mortar	Concrete
Wood Studs	W244C W244F	W231	W243	W244E	W231	N/A
Metal Studs	W244C W244F	W241	W243	W244E	W241	N/A
Solid Backing (Masonry)	N/A	W221	N/A	N/A	W201	N/A

SPECIALITY	Backer Board	Mortar
Bathtub Walls ²	B412	B411
Shower Receptor ² Floors/Walls	B415	B414
Stream Shower Receptor Floors/Walls (Opaque tile only)	SR614	SR613
Swimming Pools ⁴	N/A	N/A
Counter Tops	C513 ³	C511

¹ This method is not recommended for freeze-thaw applications. Proper drainage and a pre-sloped waterproof membrane (ANSI A118.10) are required BELOW the mortar bed

² Wood or Metal

³ Use only cementitious Backer Unit (CBU) or Fiber Cement Board

⁴ Refer to the "Pool & Water Feature Installation" document

UNACCEPTABLE SUBSTRATES

- Single-float mortar bed walls (cement mortar beds, which do not employ cured scratch coats)
- Cement mortar beds reinforced with metal lath less than 2.5 lb per square yard (i.e. chicken wire)
- Wood Products such as plywood, luan, MDF, pressboard and composites

SUBSTRATE REQUIREMENTS

- Shower receptor floors require the waterproofing below the mortar bed be sloped 1/4" per foot toward the drain and the weep holes be unobstructed per TCNA B414 and B415.
- For unmounted glass tile, install horizontal, solid blocking in the framing at a maximum spacing of 36" on center and such that all edges of the CBU are continuously supported.
- Solid blocking for the anchoring of fixtures, such as shower doors and towel bars, must be installed prior to installing the tile substrate.
- A vapor barrier membrane (asphalt laminated paper, 4 mil polyethylene, etc.) is required behind CBU and mortar beds in wet or exterior applications.
- Installing translucent glass tile over crack isolation/waterproof membranes or non-absorptive substrates (e.g. steam showers, coated glass mat gypsum, coated foam backerboards, etc.) is generally not recommended.
- Cement mortar beds must be cured a minimum of 7 days prior to tile installation.
- Treat CBU joints with mesh-tape and thin-set per the CBU manufacturer's instructions and allow to cure 48 hours prior to tile installation.

SUBSTRATE BUILD-UP (installing glass tile next to thicker tile materials)

When installing Glass Tile products adjacent to thicker materials, with the intention of the two tiles finishing in the same plane (flush), the substrate must first be brought up to a level such that the glass tile can be installed with the appropriate amount of thin-set.

Caution: Installing glass tile over fresh excessively built-up thin-set mortars may result in tile cracking due to mortar shrinkage.

INSTALLATION MATERIALS

THIN-SET

The use of specific white thin-sets are recommended for the installation of Glass Tile products (see list below), however, these products will vary in their degree of whiteness and color consistency. Due to the translucent nature of glass tiles, the color of the thin-set will affect the installed tile's appearance. Some of the thin-sets listed below are specifically manufactured for use with translucent glass tile and are marketed as "bright-white" and controlled for bag-to-bag color consistency. Confirm the thin-set color is acceptable prior to installation. For projects that require multiple bags of thin-set, select a color controlled product or confirm bag-to-bag color consistency. Carefully follow manufacturer's mixing instructions and measure liquid/powder to achieve maximum performance.

ACCEPTABLE THIN-SETS

The thin-set mortars listed below are recommended for use in interior, exterior, dry and/or intermittent wet installations.

Refer to a specific "Pool & Water Feature Installation" guide for the list of products recommended for use in submerged applications.

- BOSTIK: Glass-Mate mixed with 425 Admixture*
- CUSTOM BUILDING PRODUCTS: Glass Tile Premium Thin-Set * †
- LATICRETE: Glass Tile Adhesive *
- MAPEI: Adesilex P10 Bright White Thin-Set Mortar mixed with Keraply Mortar Additive * †
- TEC SPECIALTY PRODUCTS: Super Flex Thin-Set Mortar

* Bright White

† Color controlled bag-to-bag consistency.

NOTES:

- Organic adhesives (mastic) are not recommended due to low bond strength and yellowing.
- Epoxy adhesives are generally not recommended, however, in certain applications they may be acceptable.

GROUT SELECTION

The type of grout recommended for a Glass Tile installation will vary by tile product line, opacity and the installation's exposure to water. In all applications, cement-based, sanded grouts are compatible with our products (will not scratch the tile). However, in some specific instances, unsanded grout or urethane-based grout may be an option.

CEMENT-BASED SANDED GROUT

- ARDEX: FL Sanded Grout
- BOSTIK: Ceramic Tile Grout
- BOSTIK: Hydroment Vivid
- CUSTOM BUILDING PRODUCTS: Polyblend Sanded Grout
- CUSTOM BUILDING PRODUCTS: Prism SureColor Grout
- LATICRETE: 1500 Sanded Grout
- LATICRETE: PermaColor or Perma Color Select Grout
- MAPEI: Keracolor S
- MAPEI: Ultracolor Plus FA
- TEC: AccuColor Premium Sanded Grout
- TEC: Power Grout

CRACK ISOLATION/WATERPROOFING MEMBRANES

There are a wide variety of crack isolation and waterproofing membranes available for use in tile installations. Each membrane product will vary in type, application and performance; consult the membrane manufacturer for specific recommendations and limitations. Some common membrane materials are:

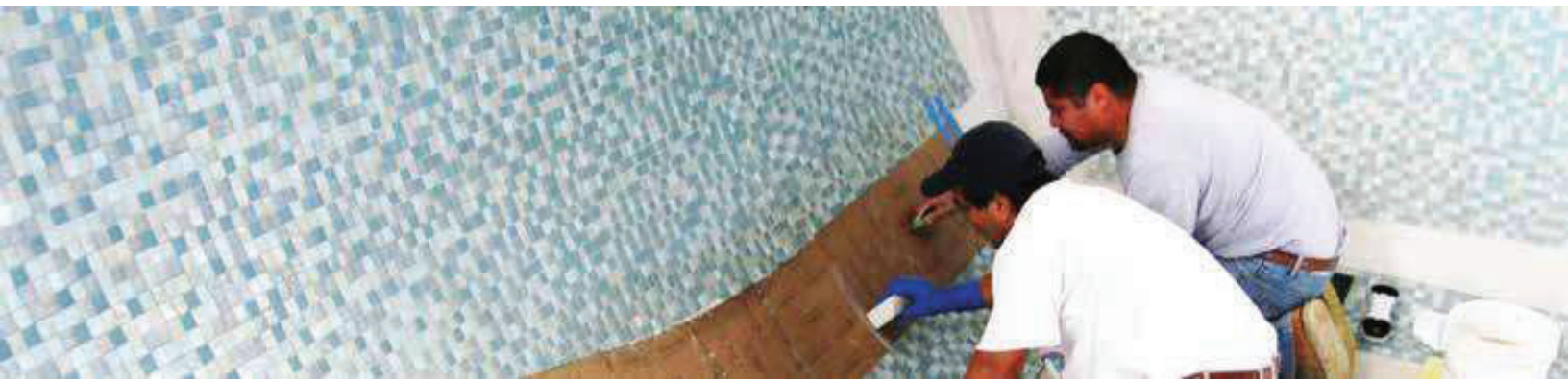
- ARDEX: 8+9
- BOSTIK: GoldPlus
- CUSTOM BUILDING PRODUCTS: RedGard
- LATICRETE: Hydro Ban
- MAPEI: Mapelastic AquaDefense
- TEC SPECIALTY PRODUCTS: HydraFlex

Caution: The use of topical crack isolation/waterproof membranes directly behind the tile bond coat (thin-set) is not recommended when installing translucent glass tile.

MOVEMENT JOINTS

Movement joints are essential for the success of most tile installations. Follow recommendations on Movement Joints EJ171 in the current edition of the "TCNA Handbook for Ceramic, Glass and Stone Tile Installation".

Movement joint requirements will vary based on substrata, climate and size of installation. An architect or design professional should be consulted when specifying the exact number and location of each movement joint. Not all sealants are recommended for submerged or heavy water use; consult sealant manufacturer for use recommendations.



PAPER-FACED MOSAIC INSTALLATION

For mosaics with a side longer than 2", use a 1/4" x 1/4" square-notch trowel.
For all other mosaic products, use a 3/16" x 1/4" v-notch trowel.



STEP 1

To initiate the bond coat, use the flat side of a trowel and firmly apply thin-set to the substrate.



STEP 2

To establish the proper depth of the setting bed, use a notch trowel to apply additional thin-set and comb full notches in one direction.



STEP 3

Use the flat side of the trowel to flatten the notches and achieve a smooth, consistent thin-set setting bed.



STEP 4

Apply mosaic sheets to the thin-set setting bed, paper side out, with light, even pressure. Periodically, check thin-set for skinning (slight drying). If skinning occurs, remove thin-set and reapply.



STEP 5

To achieve the flattest possible surface, lightly tap the sheets with a wooden beating block and a finish hammer. To unify sheet transitions, tap from one sheet to the next.



STEP 6

After 15-30 minutes, (floors can be removed sooner) lightly wet the paper. Keep the paper wet by wiping with a damp sponge several times over a 5-10 minute period. After the paper has absorbed the water, the glue will release.



STEP 7

Peel the paper from the tile starting at the corner. Removing the paper while the setting material is still fresh allows for individual tile adjustment and re-inspection of color consistency.



STEP 8

Straighten individual tiles and press-in any pieces that have not achieved 100% contact. To eliminate the sheet pattern pay particular attention to sheet transitions.



STEP 9

After a full 24 hours (some installations may require extended cure times) use water and a nylon scrub-brush to remove residual glue from the tile. Clean rinse and towel dry.



STEP 10

Grout application and cleaning process will vary based on the type and brand of grout. Refer to grout manufacturer's instructions for details.



STEP 11

Allow grout to set-up (firm) and smooth finish with a damp sponge. After approximately 2 hours remove grout haze with a lightly damp sponge.



STEP 12

For final removal of grout haze, polish with a clean, soft cloth.

PAPER-FACED MOSAIC INSTALLATION (CONTINUED)



STEP 13
Seal cement-based grout with High Performance Penetrating Sealer.



STEP 14
Apply sealer with spray bottle, paint brush or sponge applicator.



STEP 15
Allow sealer to penetrate for 1-3 minutes. Buff unabsorbed sealer from the surface with a clean cloth.

MESH-MOUNTED MOSAICS

Glass Tile mesh-mounted products should be installed using a 1/4" x 1/4" square-notch trowel and standard thin-bed tile installation practices (ANSI A108.5) in conjunction with the Material Inspection, Substrate Preparation, Installation Materials and Sealing & Maintenance specifications found within this document.

SEALING & MAINTENANCE

Glass Tile installations should be sealed, protected and maintained.

WARNING: Certain acids will damage glass tile. DO NOT allow products that contain hydrofluoric, hydrochloric, muriatic or phosphoric acid to come in direct contact with the tile.

SEALING

Glass tile is impervious and does not need to be sealed. However, cement-based grout and natural stone should be sealed to protect against staining. Seal all installations that include cement-based grout with either a **High Performance Penetrating Sealer** (natural look) or a **High Performance Enhancing Sealer** (color enriching).

RESEALING

To maintain optimal performance, sealers should be periodically reapplied. The recommended period for reapplication will vary by installation location, environmental exposure and maintenance. As a general guideline, tile and/or grout installed in any exterior, wet or high traffic installations should be resealed every 12-24 months. All other installations should be resealed every 36-48 months.

WET CUTTING MOUNTED MOSAIC TILE

Glass Tile products can be cut to meet jobsite dimensions with the use of a high-quality wet tile saw equipped with a continuous, smooth-rim, diamond glass tile blade. The cutting process detailed below can be used with face-mounted mosaics to fully support the tile, reduce chipping and protect the mounting system from saw overspray.



STEP 1

Cover the saw tray with a piece of cement board. This provides continuous support for the sheet and prevents pieces from falling into the tray's cutting channel.



STEP 2

Adjust the blade height so the blade cuts through half of the cement board thickness.



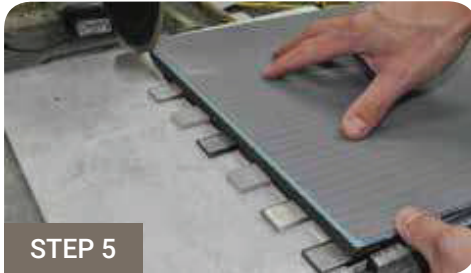
STEP 3

Cut another piece of cement board that is larger than a sheet of mosaics. Apply a strip of self-adhesive foam weather-strip to one edge of the cement board.



STEP 4

With the saw turned off, place the mosaic sheet, paper side up, on the cement board covered saw tray and align the cut.



STEP 5

Place the second piece of cement board on top of the mosaic sheet. Cover the portion of the sheet that is to be installed (keeper) with the weather-strip side down and against the blade. The board will protect the sheet from saw overspray.



STEP 6

Place downward pressure on the top layer of cement board, turn the saw on and cut slowly. The pressure should be sufficient enough to compress the weather-strip and prevent water from flowing under the board.



STEP 7

Once cutting is complete, turn the saw off, carefully remove the top layer of cement board and quickly towel dry the mounting paper.



STEP 8

Towel dry the back of the sheet and install as normal.

RECOMMENDED GLASS TILE BLADES

- Alpha Professional Tools - Vetro
- Husqvarna - Superlok Glass+
- Lackmond - Pro Series Glass Tile Blade
- MK Diamond - MK 215GL or MK 215GL-XL
- Montolit - CPV
- Rockstar Diamond - G Series Blade
- Rodia - Glass Tile Blade
- Saw Master - Cheetah Series Glass Blade (Fine)
- World Diamond Source - Pro Series Glass Tile Blade

Note - To maintain cut quality, periodically dress the diamond blade with a dressing stone.

WARNING: DO NOT DRY CUT TILE. Dry cutting causes excessive chipping/cracking and can produce harmful dust.

DRILLING

Glass Tile products can be drilled using a diamond core bit designed for drilling dense materials (e.g. glass or granite). Use sufficient water to keep the bit cool and lubricated during drilling. The diameter of all drilled holes must be large enough to allow a fastener to pass through the tile and substrate without making contact.

Filmed-Faced Mosaics Installation Instructions

The following information is provided as a general guideline for the installation of Filmed Faced Mosaics; some installations require a more detailed specification. An experienced, professional tile installer, who has read and understands this information, should perform the work.

MATERIAL INSPECTION

The owner or owner's representative is responsible for determining the acceptability of the product prior to installation. Upon delivery, open and inspect each box of tile to verify order accuracy and sheet-to-sheet color consistency. Any discrepancies should be communicated immediately to the point of purchase. Due to the handmade, artistic nature of this product, variation in color, shade, tone, shape and size should be expected. No adjustments will be made after installation.

SUBSTRATE PREPARATION

In general, there are three types of acceptable substrates:

- Cement Mortar - Two-coat cement mortar beds reinforced with 2.5 lb galvanized metal lath, cured a minimum of 7 days
- Cement Backer Board (CBU) - Durock, Fiberock, Hardibacker, PermaBase, Wonderboard
- Drywall - Dry locations only

The tile installation's substructure, location and substrate type (i.e. CBU or concrete) will influence the details of how the substrate should be prepared. The following substrate preparation methods are detailed in the Tile Council of North America's "TCNA Handbook for Ceramic, Glass, and Stone Tile Installation" and are organized by alphanumeric designation (i.e. W244C). Use the following chart to identify which TCNA method is appropriate for your installation and refer to the current edition of the TCNA Handbook for details. The TCNA handbook is available for purchase at www.tcnatile.com.

WALLS	INTERIOR			EXTERIOR		
	Backer Board	Mortar	Drywall	Backer Board	Mortar	Drywall
Wood Studs	W244C W244F	W231	W243	W244E	W231	N/A
Metal Studs	W244C W244F	W241	W243	W244E	W241	N/A
Solid Backing (Masonry)	N/A	W221	N/A	N/A	W201	N/A

SPECIALITY	Backer Board	Mortar
Bathtub Walls ²	B412	B411
Shower Receptor ² Floors/Walls	B415	B414
Stream Shower Receptor Floors/Walls (Opaque tile only)	SR614	SR613

UNACCEPTABLE SUBSTRATES

- Single-float mortar bed walls (cement mortar beds, which do not employ cured scratch coats)
- Cement mortar beds reinforced with metal lath less than 2.5 lb per square yard (i.e. chicken wire)
- Wood Products such as plywood, luan, MDF, pressboard and composites

¹ This method is not recommended for freeze-thaw applications. Proper drainage and a pre-sloped waterproof membrane (ANSI A118.10) are required BELOW the mortar bed

² Wood or Metal

³ Use only cementitious Backer Unit (CBU) or Fiber Cement Board

SUBSTRATE REQUIREMENTS

- Solid blocking for the anchoring of fixtures, such as shower doors and towel bars, must be installed prior to installing the tile substrate.
- A vapor barrier membrane (asphalt laminated paper, 4 mil polyethylene, etc.) is required behind CBU and mortar beds in wet or exterior applications.
- Cement mortar beds must be cured a minimum of 7 days prior to tile installation.
- Treat CBU joints with mesh-tape and thin-set per the CBU manufacturer's instructions and allow to cure 48 hours prior to tile installation.

INSTALLATION MATERIALS

THIN-SET

We recommend the following white thin-sets for the installation:

Acceptable Thin-Sets

- ARDEX X 77
- CUSTOM BUILDING PRODUCTS: Premium Glass Tile Thin-Set Mortar
- BOSTIK: Glass-Mate mixed with 425 Admixture
- Laticrete Glass Tile Adhesive
- MAPEI: Adesilex P10 Bright White Thin-Set Mortar mixed with Keraply Mortar Additive
- TEC SPECIALTY PRODUCTS: Super Flex Thin-Set Mortar

Unacceptable Adhesives

- Organic Adhesives (Mastic) - due to low bond strengths
- Epoxy - due to low flexibility

GROUT

Art Glass Mosaics may be grouted with cement-based sanded or unsanded grout, urethane grout or epoxy grout. Grout selection should be based on the grout joint size of the specific pattern and intended application.

MEMBRANES

There are a wide variety of anti-fracture and waterproofing membranes available for use in tile installations. Membranes will vary in type, installation method and performance. Depending on the application, installing over an anti-fracture membrane may be beneficial. Consult the membrane manufacturer for specific recommendations and limitations.

MOVEMENT JOINTS

Movement joints are essential for the success of most tile installations. Follow recommendations on Movement Joints EJ171 in the current version of the TCNA Handbook for Ceramic, Glass and Stone Tile Installation. Movement joint requirements will vary based on substrata, climate and size of installation. An architect or design professional should be consulted when specifying the exact number and location of each movement joint.

FEATURE STRIP INSTALLATION

(installing next to thicker tile materials)

When installing adjacent to thicker materials, with the intention of the two tiles finishing in the same plane (flush), the substrate must first be brought up to a level such that the glass tile can be installed with the recommended amount of thin-set.

Caution:

Installing glass tile over fresh excessively built-up thin-set mortars may result in tile cracking due to thin-set shrinkage.

CUTTING & DRILLING

Art glass can be cut to meet jobsite dimensions with the use of a high-quality wet tile saw equipped with a continuous, smooth-rim, diamond glass tile blade or with score and snap glass cutting tools. To minimize chipping of tile and back coatings, fully support the tile during cutting, cut or drill slowly and cool the cutting or drilling tool with liberal water flow.

INSTALLATION PROCESS



STEP 1

To initiate the bond coat, use the flat side of a trowel and firmly apply thin-set to the substrate.



STEP 2

To establish the proper depth of the setting bed, use a 3/16" x 1/4" v-notch trowel to apply additional thinset and comb full notches in one direction.



STEP 3

Apply mosaic sheets to the thin-set setting bed, plastic film side out, with light, even pressure. Periodically, check thin-set for skinning (slight drying). If skinning occurs, remove thin-set and reapply.



STEP 4

To achieve the flattest possible surface, lightly tap the sheets with a rubber grout float. Pay particular attention to the sheet-to-sheet intersections.



STEP 5

After a full 24 hours (some installations may require extended cure times) starting at the corner; peel the plastic from the tile.



STEP 6

If necessary, remove excess thin-set from the grout joints with a razor knife prior to grouting.



STEP 7

Apply grout per the grout manufacturer's instructions. When grouting with sanded grout, use care during application to minimize scratching.

NOTE: Grout application and cleaning process will vary based on the type and brand of grout. Refer to grout manufacturer's instructions for details.