



# Tile & Stone Backer Board Selection Guide TDS 294

There is a wide array of backer boards available for tile and stone installation that serve multiple or defined functions besides that of providing a suitable underlayment. Some backer boards can only be used in limited areas like dry, interior wall applications; others can be used on floors, walls, ceilings and wet areas. Some function as a suitable substrate for all type of interior applications and can even provide insulation and vapor retarding properties. An example of such underlayment is the HYDRO BAN Board<sup>®</sup> which is versatile enough to be used in steam shower applications and even radiant floor heat applications that require a thermal break. Like most building materials, these boards have been tested by a corresponding ANSI, ASTM, ISO, EN standards, or a manufacturers' proprietary test procedure. Always refer to their applicable standard and/or manufacturers' installation instructions to confirm suitability for the desired application.

## GENERAL CONDITIONS

Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials.

All substrates to receive ceramic tile, stone, masonry veneer, thin brick, or similar hard architectural finishes installed by the thin-bed method, including where Backer Boards are installed, must be structurally sound, clean and not deflect more than L/600 for exterior applications and L/360 for interior applications (where L = span) under all distributed or concentrated live and dead loads.

Provide movement/expansion joints for ceramic tile, stone and thin brick installations as per Tile Council of North America, Inc. (TCNA) Handbook for Ceramic, Glass, and Stone Tile Installation {Movement Joint Essentials EJ-171}.

The TCNA "Handbook for Ceramic, Glass, and Stone Tile Installation" calls out different types of boards based on the applicable installation method and the board's characteristics/performance as stated by their corresponding standards. The following is a brief description of the most commonly used backer board types as defined by their ANSI, ASTM and/or TCNA:

### Cement Backer Unit:

**ANSI A118.9-2.1** *Cementitious backer unit (CBU)* – A nailable/screwable backer board or underlayment panel which is composed of stable Portland cement, aggregates, and reinforcements that have a significant ability to remain unaffected by prolonged exposure to moisture.

**ASTM C1325** *Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units*. "This specification covers non-asbestos fiber-mat reinforced cementitious backer units manufactured to be dimensionally stable and suitable as either an unfinished substrate or as a substrate for decoration such as natural stone or tile on walls, floors, or decks in wet and dry areas."

- An example of a cementitious backer unit is National Gypsum<sup>®</sup> PermaBase<sup>®</sup>

### Glass Mat Water-Resistant Gypsum Backer Board:

**ASTM C1658** *Standard Specification for Glass Mat Gypsum Panels*. "Glass mat water-resistant gypsum panel designed to be used as a base for the application of ceramic or plastic tile on walls or ceilings. Glass mat gypsum panel shall consist of a noncombustible core, gypsum, surfaced with glass mat partially or completely embedded in the core. Flexural strength, humidified deflection, null pull resistance, water resistance, and surface water absorption and shall conform to the physical property requirements of the materials specified".

- An example of a glass-mat board is USG Sheetrock<sup>®</sup> Brand Glass-Mat Panels MOLD TOUGH<sup>®</sup>

**Fiber-Reinforced Water-Resistant Gypsum Backer Board:**

*ASTM C1278 Standard Specification for Fiber-Reinforced Gypsum Panel.* “1.1.2 Water-Resistant Fiber-Reinforced Gypsum Backing Panels - are designed primarily to be used as a base for the application of ceramic or plastic tile on walls or ceilings. This product is also suitable for decoration.”

- An example of a fiber-reinforced board is USG Fiberock<sup>®</sup>

**Cementitious-Coated Extruded Foam Board:**

*TCNA Reference – Backer Board Selection Guide* - “A waterproof backer board constructed from extruded polystyrene and coated with a cementitious coating, designed as a substrate for ceramic tile and stone in wet and dry areas. Designed for use on floors, walls and ceilings in dry or wet areas, this board is applied directly to wood or metal wall studs or over wood subfloors”.

*ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.*

- An example of a cementitious-coated board is wedi<sup>®</sup> building board

**Coated Glass Mat Water-Resistant Gypsum Backer Board:**

*ASTM C1178 Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.* “This specification covers coated glass mat water-resistant gypsum backing panel designed for use on ceilings and walls in bath and shower areas as a base for the application of ceramic or plastic tile. Coated glass mat water-resistant gypsum backing panel shall consist of a noncombustible water-resistant gypsum core, surfaced with glass mat, partially or completely embedded in the core, and with a water-resistant coating on one surface.”

- An example of this type of board is Georgia-Pacific DensShield<sup>®</sup>

**Fiber-Cement Backer Board:**

*ASTM C1288 Standard Specification for Fiber-Cement Interior Substrate Sheets.* “This standard covers dimensionally stable discrete non-asbestos fiber-cement interior substrate sheets suitable for decoration as paint, wallpaper, natural stone, tile, or resilient flooring in internal wet and dry areas.... The sheets may be coated or uncoated and are classified into four grades according to flexural strength.”

- An example of fiber-cement board is JamesHardie<sup>™</sup> HardieBacker<sup>®</sup>

**Magnesium Oxide Board (MGO):**

*ASTM E84 Standard Test Methods for Surface Burning Characteristics of Building Materials.*

*ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.*

Note: Confirm with the board manufacturer for suitability as an underlayment for direct tile adhesion as some of these boards may require the use of a primer, a liquid membrane, or an uncoupling membrane.

- An example of magnesium oxide board is HUBER<sup>®</sup> EXACOR<sup>™</sup>

**Gypsum Board:**

*TCNA Reference – Backer Board Selection Guide* – “Gypsum wall board, including water-resistant gypsum backing board, may not be used as a backing for direct application of tile in intermittent wet or wet areas.”

*ASTM C1396 Standard Specification for Gypsum Board.* “This specification covers gypsum boards which include the following: gypsum wallboard for use on walls, ceilings, or partitions and that affords a surface suitable to receive decoration... Gypsum board shall consist of a noncombustible core, essentially gypsum, surfaced with paper bonded to the core.”

### Foam Core Backer Boards (Standard under development):

“A lightweight ready to tile wall board designed for used in bonded tile or stone installations. Made with a high-density, waterproof extruded polystyrene core and a reinforced, waterproof membrane on both sides to give protection from water and vapor intrusion”.

- An example of this type of board is the LATICRETE® HYDRO BAN® Board

Note: the use of some of these backer boards in intermittent wet or wet areas may be limited or prohibited all together unless used in conjunction with a waterproofing and/or vapor retarding membrane. The membrane manufacturer must confirm suitability of the backer board for the desired application. There could be a lot of confusion when specifying the appropriate backer board for the application, however, it is always best to confirm suitability with the backer board manufacturer and rely on TCNA guidelines and applicable standards to ensure a successful and long-lasting installation. The following chart illustrates the different types of boards and their installation methods:

Backer Board Type	ANSI	ASTM	TCNA Detail #
Cement Backer Board	A.118.9	C1325	W244 - B412 – B415
Glass Mat Water-Resistant Gypsum Backer Board		C1658	W248
Fiber-Reinforced Water-Resistant Gypsum Backer Board		C1278	W247 - B430 – B431
Cementitious-Coated Extruded Foam Board		C578	W246 - B425 – B426
Coated Glass Mat Water-Resistant Gypsum Backer Board		C1178	W245 - B419 – B420
Fiber-Cement Backer Board		C1288	W244F - B412 – B415
Gypsum Board		C1396	W242 - B413 (No Showerhead)
Solid Backing*			B421 - B422
Magnesium Oxide Board			N/A

\*Refer to appropriate wall method for applicable requirements based on type of backing used

## GENERAL INSTALLATION INSTRUCTIONS

### INTERIOR WALLS OVER WOOD OR STEEL FRAMING

- Fasten the Backer Board with appropriate length, non-rusting, self-embedding screws for wood or metal studs. Note some backer board manufacturers required the use of tab washers. Fasten the boards every 6” (150mm) at the edges and every 8” (200mm) in the field or as specified by manufacturer. Tape all the board joints with either tape, sealant, membrane, or as specified by manufacturer. If alkali resistant mesh tape is required, imbed the tape in the same mortar used to install the ceramic tile, stone or thin brick (see below).
- To prevent water leakage through walls, especially in bathroom areas such as tub surrounds and showers, apply a LATICRETE waterproofing membrane over the backer board (if applicable) before installing ceramic tile, stone or thin brick (refer to Data Sheets 236.0, 663.0, 105.0, 386.2, 663.5, 105.5, or WPAF.5 for additional information on the specific LATICRETE waterproofing membrane specified).
- Install ceramic tile, stone or thin brick with a suitable mortar/adhesive as specified by the backer board and/or tile manufacturer
- Apply the suitable mortar or adhesive recommended in the following manner:  
Wipe the Backer Board with a damp sponge to remove dust and to increase working/adjustability time over hot, dry surfaces. Apply the mortar or adhesive, using the flat side of the trowel to work the material into good contact with the Backer Board. Then comb on additional material with the notched side of the trowel. Spread only as much material as can be covered in 15–20 minutes. Use the correct size notched trowel and “back butter” the tiles, if necessary, to achieve the correct coverage. “Back butter” all tile larger than 8”x 8” (200mm x 200mm) in facial area. Check your bond periodically by removing a tile and verifying the extent of coverage – ensure that tiles are fully bedded with a minimum 3/32” (2.5mm) thick continuous layer of mortar/epoxy adhesive.
- **Caution:** Always consult with the backer board manufacturer to confirm suitability for the specified application and installation method.

- **Caution:** use LATAPOXY 300 Adhesive or LATAPOXY BIOGREEN™ 300 to install moisture sensitive marble, resin-backed tile and stone, and agglomerates.
- **Caution:** to install white or light-colored stone, use white 272 Mortar or 317 Mortar (mixed with the LATICRETE Latex Additive indicated above) or white 254 Platinum, 254R Platinum Rapid, 257 TITANIUM, TRI LITE, TRI LITE Rapid, MULTIMAX™ LITE, 4-XLT, 4-XLT Rapid, SELECT BOND™ (white) with or without kits, 253 Gold, 253R Gold Rapid or 252 Silver.
- **Consult** LATICRETE product data sheets for specific installation instructions.

For a complete copy of ASTM standards please visit <https://www.astm.org/>

For a complete copy of ANSI standards please visit <https://www.ansi.org/>

For more information regarding the Tile Council of North America (TCNA) and to access the latest “TCNA Handbook for Ceramic, Glass, and Stone Tile Installation” please visit <https://www.tcnatile.com/>

Technical Data Sheets are subject to change without notice. For latest revision, check our website at [www.laticrete.com](http://www.laticrete.com)  
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