



Georgia-Pacific

**DensShield**<sup>®</sup>

Tile Backer



**Mold  
and Moisture  
Resistant  
PAPERLESS  
SOLUTIONS**

## Product Overview



DensShield® Tile Backer is designed for use as a tile substrate for walls, ceilings, floors, and countertops. DensShield is an ideal tile backer board for high moisture areas because it has a built-in moisture barrier that stops moisture at the surface. This special coating protects the tile installation and wall cavity from moisture intrusion. DensShield is mold resistant, scoring a 10, which means no mold growth when tested in accordance with ASTM D3273.

DensShield tile backer has three unique properties:

- Grey heat applied acrylic coating – stops moisture on the surface
- Glass mats on front and back add strength to the panel – no paper to delaminate or serve as a potential source for mold
- Proprietary water-resistant treated core.

*Patented product with treated, water-resistant core.*

*Glass mats on front and back add strength.*

*No paper to delaminate or serve as food for mold.*

*Grey, heat-cured acrylic coating helps protect the tile installation and wall cavity from moisture intrusion and damage.*

*The only tile backer in the industry with a built-in moisture barrier.*

## Physical Properties

| Properties                    | 1/4" DensShield  | 1/2" DensShield          | 5/8" DensShield       |
|-------------------------------|--|--------------------------|-----------------------|
| Width, standard               | 4'   | 4', 32"                  | 4'                    |
| Length, standard              | 4'   | 5', 8'                   | 8'                    |
| Edges                         | square   | square                   | square                |
| Weight, lbs./sq. ft., nominal | 1.6  | 2.0                      | 2.5                   |
| Bending Radius                | 8'   | 12'                      | 16'                   |
| Fire Classification           | n/a  | 1- and 2-hour assemblies | Type X, UL classified |
| Standards                     | ASTM C 1178  | ASTM C 1178              | ASTM C 1178           |
| Code Evaluation               | IRC and IBC Code Compliant, NY MEA 65-88-M, ICC-ES Legacy Report 572   |                          |                       |
| TCA Recognition               | ASTM C 627 (Robinson Floor Test); Floors - F146; Walls - W245; Ceilings - C311 and C312; Tubs - B419; Showers - B420 |                          |                       |

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## Testing and Code Recognition

**Robinson Floor Test/ASTM C 627** – DensShield Tile Backer passed the industry standard test conducted by the Tile Council of North America for residential and light commercial floors.

**Adhesion Bond Testing** – CTC-Geotek conducted tests comparing adhesion capabilities using most major manufacturers' setting materials. The tests concluded that bonds with DensShield Tile Backer are as good, if not better, than bonds with cement board.

**Moisture Wick Testing** – The Ceramic Tile Institute wicking test CTI-T83 procedures showed that within a 24-hour period, cement board will "wick" at least 3" up the board while DensShield Tile Backer will wick less than one-third of 1" (.31") during that same period.

**Shower Test** – In a remarkable test by an independent testing firm, DensShield Tile Backer was subjected to a shower of water at 110°F, 15 minutes per hour for 24 hours, five days per week for one-year. The installation had **no grout** between wall and ceiling tiles. No deterioration occurred. Water-resistant greenboard was tested under the same conditions. A similar test was conducted using cement board at CTC-Geotek. DensShield Tile Backer **outperformed** cement board and water-resistant greenboard. Test results are available upon request.

The DensShield Tile Backer test compares to 28 years of showers without deterioration. **Although cementitious backer boards would not likely deteriorate under the same conditions, the possibility exists for deterioration of framing members and wall cavity due to water infiltration if a moisture barrier isn't positioned behind the cementitious backer unit.**

**Percolation Test** – The International Conference of Building Officials - Evaluation Service (ICBO-ES) percolation test measures how much water will pass through a panel within 48 hours. The test determines if an additional moisture barrier should be installed. The test consists of a 2" diameter tube, 48" long, bonded to test samples with silicone sealant. The tube is filled with water and after the allotted time, the remaining water is measured (minus evaporation).

1/8" of water passed through DensShield Tile Backer, 19"+ of water passed through one cementitious tile substrate sample and 43"+ of water passed through another sample of cement board. **The test shows that DensShield Tile Backer stops water at the surface, while cement boards allow water to pass through their porous construction.** The Tile Council of America requires the use of a membrane in wet areas for cement backer boards but does not require a membrane for DensShield since DensShield has a built-in moisture barrier that stops moisture at the surface.

**Mold Resistance Test** – When tested, as manufactured, in accordance with ASTM D 3273, DensShield Tile Backer scored a 10, the highest level of performance for mold resistance under the ASTM D 3273 test method.

The score of 10, in the ASTM D 3273 test, indicates no mold growth in a 4-week controlled laboratory test. The mold resistance of any building product when used in actual job site conditions may not produce the same results as were achieved in the controlled, laboratory setting. No material can be considered mold proof. When properly used with good design, handling and construction practices, products with Dens™ Technology provide increased mold resistance compared to standard paper faced wallboard.

**Standards and Code Compliance** – IRC and IBC Code Compliant DensShield Tile Backer in 1/4", 1/2" and 5/8" thicknesses meets ASTM C 1178 as a glass mat gypsum substrate for use as tile backer. DensShield Tile Backer has the following evaluation reports: ICC-ES Legacy Report 572; New York City MEA 65-88-M.

**DensShield Tile Backer installation information is listed in the current Tile Council of America (TCA) *Handbook for Ceramic Tile Installation*.**

## Tub/Shower Walls or Ceilings



### DS001 Walls or Ceilings

DensShield® Tile Backer can be used as a tile substrate in residential and commercial wall applications. Attach DensShield Tile Backer with grey side facing the interior. Tiles should always be applied to grey side. Cut panel to required size and make cutouts. Fit ends and edges closely. Do not leave gaps between panels.

DensShield Tile Backer may be cut by using a utility knife to score, then snap, working from the grey face side.

For walls, when used as a tile substrate, 20-gauge steel or wood framing should be spaced no greater than 16" o.c. for 1/2" DensShield Tile Backer or 24" o.c. for 5/8" DensShield Tile Backer. Board can be applied horizontally or vertically.

For ceilings, framing should be spaced no greater than 12" o.c. for 1/2" thickness or 16" o.c. for 5/8" thickness. Board should be applied perpendicular to framing.

Fasteners shall be spaced 6" o.c. for walls and ceilings for wood and metal framing. Do not countersink. Drive fasteners flush with grey coated surface. Nails: galvanized roofing nails 1-1/2" for 1/2" DensShield Tile Backer, 1-3/4" for 5/8" DensShield Tile Backer. Screws: corrosion-resistant minimum 1-1/2" bugle head drywall screws for 1/2" DensShield Tile Backer, and 1-5/8" bugle head drywall screws for 5/8" DensShield Tile Backer.

Do not use additional moisture barrier. DensShield Tile Backer has a built-in moisture barrier.

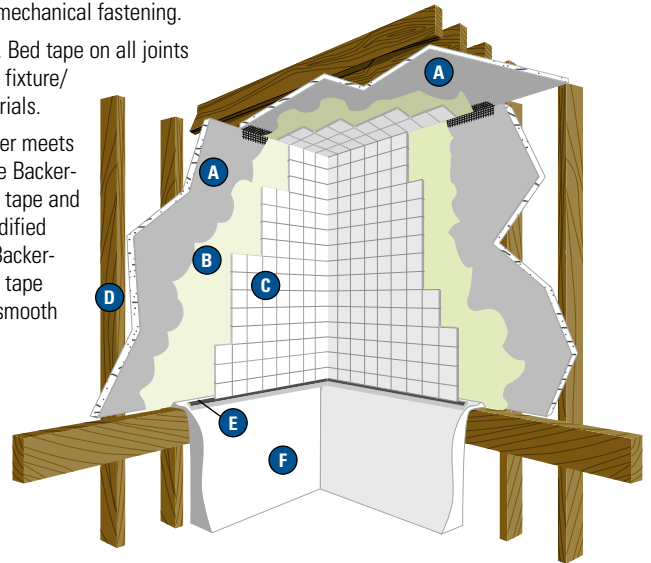
Do not use all-purpose joint compound or paper tape in wet areas.

Do not use DensShield panels as a base for nailing and mechanical fastening.

Use self-adhesive 2" wide 10 x 10 glass fiber mesh tape. Bed tape on all joints and corners with material used to set tiles. Caulk or seal fixture/plumbing penetrations and abutments to dissimilar materials.

In areas outside the shower where DensShield Tile Backer meets gypsum board: (1) If the tiles fall over the DensShield Tile Backer-to-gypsum board joint, apply 2" wide 10 x 10 glass mesh tape and skim with tile setting material (Type I mastic or latex modified thin-set). (2) If the tiles stop before the DensShield Tile Backer-to-gypsum board joint, apply 2" wide 10 x 10 glass mesh tape and skim with setting type joint compound to achieve a smooth and paintable surface.

- A. DensShield Tile Backer
- B. Tile adhesive
- C. Tiles
- D. Wood or min. 20-gauge metal framing
- E. Flexible sealant into min. 1/8" gap
- F. Bathtub



### DS002 Shower Pan

Install DensShield Tile Backer on walls according to assembly DS001.

Shower pan or rubber membrane must be adequately sloped to the open drain or weep-hole detail to permit proper water drainage.

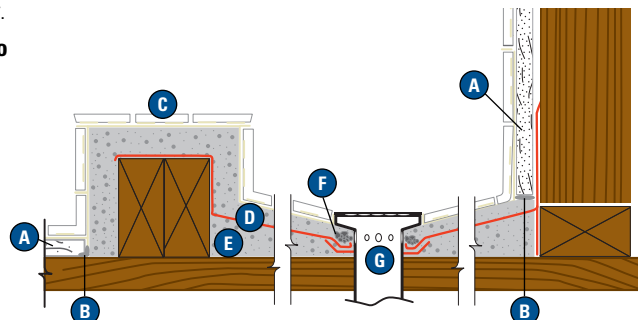
For showers with curbs, apply waterproof membrane up walls minimum 2" and maximum 4" above curb. Do not use DensShield Tile Backer in the curb.

For showers without curbs, apply waterproof membrane up walls minimum 6" and maximum 8".

Wood or other satisfactory blocking should be applied at the bottom framing to support the vertical sides of the shower pan or membrane and DensShield Tile Backer.

**Do not place DensShield Tile Backer into shower pan mortar bed. Leave minimum 1/8" gap and fill with flexible sealant.**

- A. DensShield Tile Backer
- B. Flexible sealant into min. 1/8" gap
- C. Tiles
- D. Sloped rubber membrane
- E. Sloped mortar bed
- F. Crushed stone
- G. Weep holes

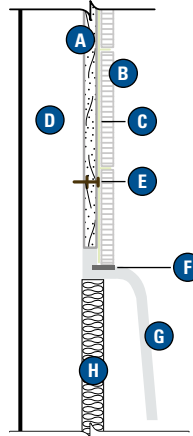




**DS003 Bathtub or Shower Receptor**

Apply DensShield® Tile Backer either horizontally or vertically on walls as shown in DS001.  
To prevent water penetration, completely fill the space between tile and tub with a flexible sealant.

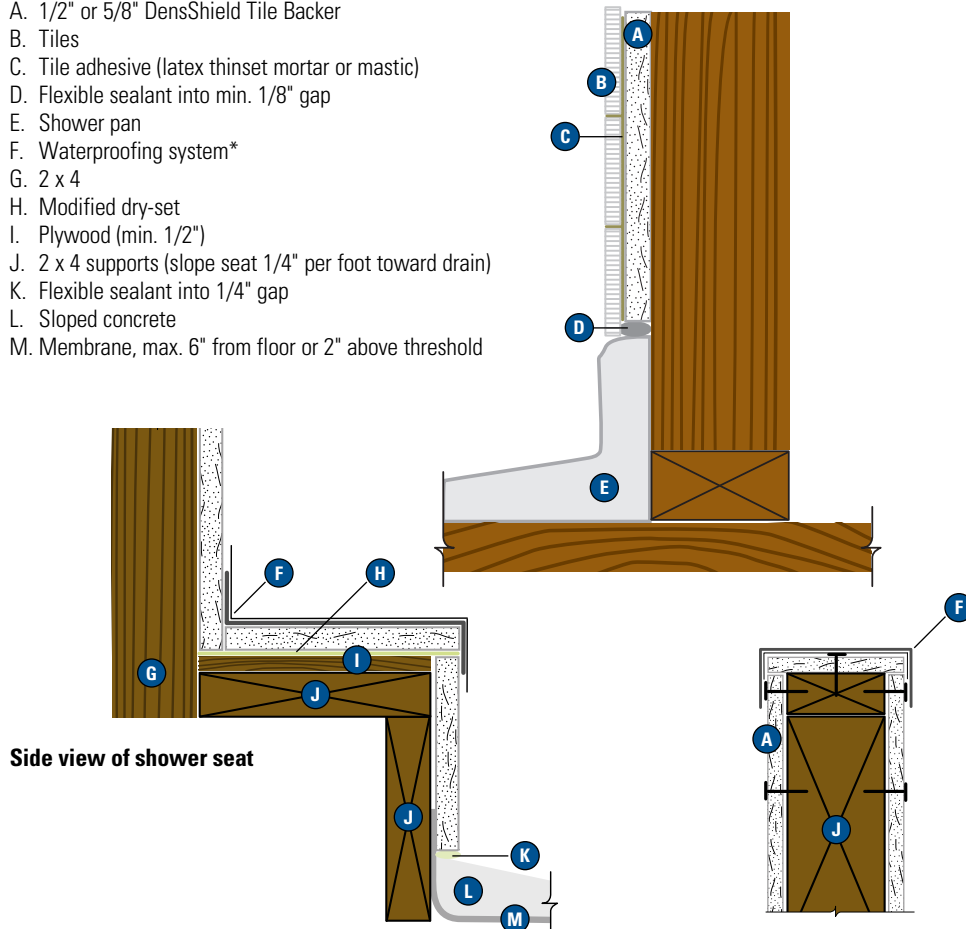
- A. DensShield Tile Backer
- B. Tiles
- C. Tile adhesive (latex thinset mortar or mastic)
- D. Wood or metal studs
- E. Fastener
- F. Flexible sealant into min. 1/8" gap
- G. Bathtub
- H. Fireproofing when required (by other trades)



**DS004 Other Details**

Apply DensShield Tile Backer either horizontally or vertically on walls as shown in DS001.  
To prevent water penetration, completely fill the space between tile and tub with a flexible sealant.

- A. 1/2" or 5/8" DensShield Tile Backer
- B. Tiles
- C. Tile adhesive (latex thinset mortar or mastic)
- D. Flexible sealant into min. 1/8" gap
- E. Shower pan
- F. Waterproofing system\*
- G. 2 x 4
- H. Modified dry-set
- I. Plywood (min. 1/2")
- J. 2 x 4 supports (slope seat 1/4" per foot toward drain)
- K. Flexible sealant into 1/4" gap
- L. Sloped concrete
- M. Membrane, max. 6" from floor or 2" above threshold



\* Apply waterproofing system, like Laticrete 9235 or equal, over entire horizontal surface and a minimum 3" on adjacent vertical surfaces.

## Residential and Light Commercial Floors

### DS005

1/4" and 1/2" DensShield® Tile Backer can be used as a tile substrate in residential and light commercial floor tile applications as defined in the *Handbook for Ceramic Tile Installation*, published by the Tile Council of America.

Laminate DensShield panels, grey coated side up, to subfloor using a latex portland cement mortar liberally applied with minimum 1/4" x 1/4" x 1/4" square-tooth notched trowel. Embed DensShield Tile Backer into mortar while still pliant (do not exceed open time). Stagger DensShield Tile Backer joints so as not to align with subfloor joints. Butt panels tightly to each other. Leave no gaps between panels.

Fasten panels to subfloor with 1-1/4" galvanized roofing nails or corrosion-resistant screws. Begin fastening in the center of each panel, working your way to the edges. Avoid nailing into floor joists on new construction to prevent nail pops. Space fasteners no greater than 8" o.c. in both directions. Drive fasteners flush with the acrylic surface. Do not countersink.

Staples: (1/4" DensShield only) 1/4" or larger crown corrosive resistant chisel-point staples equal to approximately the total thickness of underlayment and subfloor. Staples shall be placed 2" o.c. around the perimeter and 4" o.c. in the field insuring that the staples are between 3/8" and 1/2" from ends and edges.

Apply 2" wide 10 x 10 glass mesh tape over joints. Embed tape with setting material.

Apply flooring-grade tile with latex portland cement mortar. Full-thickness thresholds should be used and butted against the DensShield panels, flush with the tile surface. Use a 2" x 2" or larger floor-grade tile.

Use either standard floor grout (ANSI A118.6) or polymer modified grout (ANSI A118.7).

DensShield Tile Backer is not to be used in conjunction with heated floor systems that exceed 120°F continuous temperature.

DensShield Tile Backer is not for exterior use.

Do not use Type I organic mastics for floor applications.

#### Requirements:

Design floor areas over which tile is to be applied to have a deflection not greater than L/360 of the span when measured under 300 lb. concentrated load (see ASTM C 627). Maximum variation in the subfloor surface shall not exceed 1/2" in 10'-0" from the required plane. Use latex portland cement mortar to set tile. Keep DensShield Tile Backer surfaces clean and free of dirt, dust or oily film.

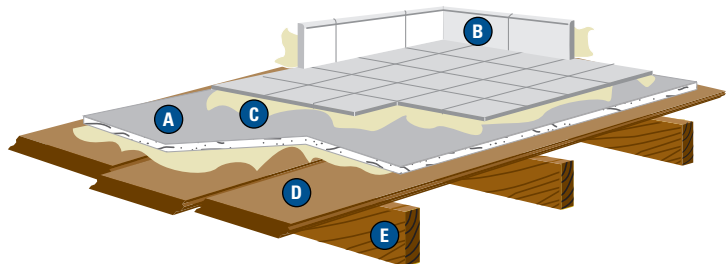
#### Materials:

Coated glass mat backer board – ASTM C 1178. Latex portland cement mortar – ANSI A118.4. Polymer modified tile grout – ANSI A118.7.

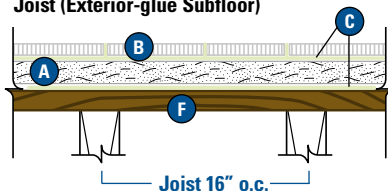
#### Installation Specifications:

Coated glass mat backer board in accordance with manufacturer’s literature. Tile – ANSI A 108.5. Grout – ANSI 108.10.

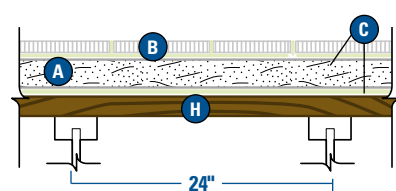
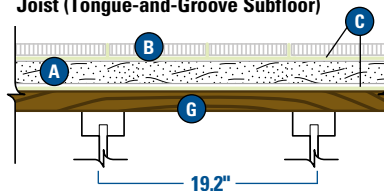
- A. Min. 1/4" DensShield Tile Backer
- B. Tile
- C. Latex Portland Cement Mortar
- D. Subfloor
- E. Floor Joists
- F. 5/8" APA Rated Sturd-I-Floor®
- G. 3/4" APA Rated Sturd-I-Floor®
- H. 7/8" APA Rated Sturd-I-Floor®



**DensShield Tile Backer Over Conventional Joist (Exterior-glu Subfloor)**



**DensShield Tile Backer Over Engineered Joist (Tongue-and-Groove Subfloor)**



| Minimum Subfloor Thickness    | Maximum Joist Spacing        |
|-------------------------------|------------------------------|
| 5/8" Plywood Sturd-I-Floor®*  | 16" o.c. joists              |
| 3/4" Plywood Sturd-I-Floor®*  | 19.2" o.c. engineered lumber |
| 7/8" APA Rated Sturd-I-Floor® | 24" o.c. engineered lumber   |

\*3/4" OSB is acceptable

*The application of thin-set over subfloor provides a leveling bed between the subfloor and the back of DensShield Tile Backer. If this step is not completed, air gaps can cause movement and crack the grout lines. (This step is common with all other backer board products.)*

## Countertops

### DS006

Plywood must be installed flat and level.

Framing spacing should not exceed 24" o.c.

Install minimum 1/2" exposure 1 plywood on top of supports.

Provide support on overhangs on cantilever counters to prevent movement.

Apply leveling bed of latex portland cement mortar to plywood using 1/4" x 1/4" x 1/4" notched trowel.

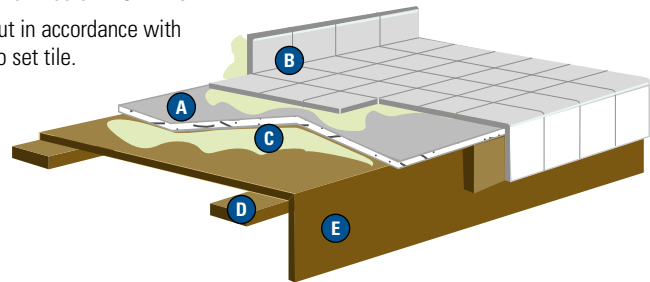
Apply clean, dry DensShield® Tile Backer to base (grey acrylic coated side up), fastening every 6" to 8" o.c. in both directions into substrate while leveling bed is still fluid. Use either 1-1/4" galvanized roofing nails or 1-1/4" rust-resistant drywall screws.

Stagger joints of DensShield Tile Backer panels with those of the plywood base.

Butt DensShield Tile Backer joints tightly. Tape all joints and corners using 2" wide self-adhering fiberglass mesh tape. Embed tape with latex portland cement mortar that meets ANSI A118.4.

Install tile, expansion and control joints and grout in accordance with ANSI A108. Use latex portland cement mortar to set tile.

- A. Min. 1/4" DensShield Tile Backer
- B. Tile
- C. Latex Portland Cement Mortar
- D. Framing support
- E. Base min. 1/2" plywood



## Non-Tile Walls or Ceilings

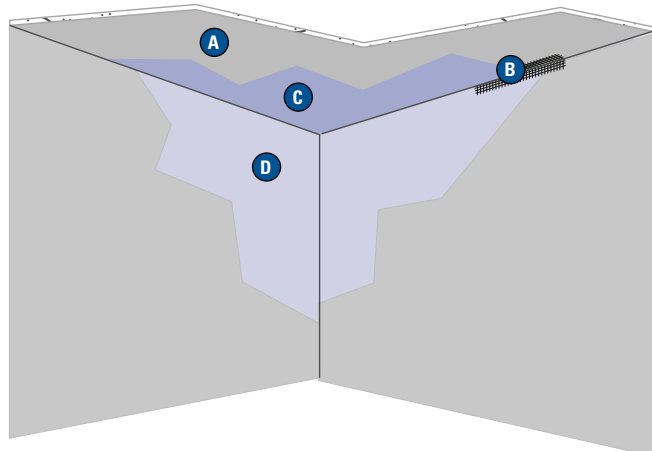
### DS010 Dry Non-tile, Non-Wet Areas

This installation should be used in interior non-tile areas that do not come in contact with water and may experience intermittent exposure to high levels of humidity for short and infrequent periods of time, such as outside of tub and shower areas in residential construction. For walls, steel (25-gauge min.) or wood framing should be spaced no greater than 16" o.c. for 1/2" DensShield Tile Backer or 24" o.c. for 5/8" DensShield Tile Backer. For ceilings, board should be spaced no greater than 12" o.c. for 1/2" thickness or 16" o.c. for 5/8" thickness.

#### Setting-Type Joint Compound

Apply 2" 10 x 10 glass mesh tape over joints and angles. Embed tape in setting compound. Trowel (skim-coat) setting compound over entire DensShield Tile Backer panel to produce a smooth surface. Prior to painting or papering, the surface should always be primed with a primer suitable for high-moisture areas, as recommended by the paint or wallpaper manufacturer for applications over setting-type joint compound. Do not use ready-mix or sandable setting-type joint compounds in this type of application.

- A. Min. 1/2" DensShield Tile Backer
- B. 2" Wide 10" x 10" Glass Mesh Tape
- C. Paint
- D. Setting-Type Compound (Skim Coat)



## High-Humidity Non-Tile Areas

### DS011

For areas exposed to continuous, higher-than-normal moisture levels, such as those found in enclosed swimming pools, garden areas, therapy rooms, locker rooms, laboratory white rooms, operating rooms, commercial and institutional kitchens, etc., finish DensShield® Tile Backer with materials that are highly water-resistant and form a moisture barrier in conjunction with DensShield Tile Backer of less than 0.5 perms. For walls, steel or wood framing should be spaced no greater than 16" o.c. for 1/2" DensShield Tile Backer or 24" o.c. for 5/8" DensShield Tile Backer. For ceilings, board should be spaced no greater than 12" o.c. for 1/2" thickness or 16" o.c. for 5/8" thickness. See Sto Corporation Specification No. F-477; Dryvit Systems Inc. Specification No. DS 174; or other manufacturers' highly water-resistant equivalents.

*Note: A finishing method must never be used in a more severe environment than described.*

## Wet Non-Tile Areas

### DS012

For wet, non-tile areas, steel or wood framing should be spaced no greater than 16" o.c. for 1/2" DensShield Tile Backer or 24" o.c. for 5/8" DensShield Tile Backer. For ceilings, board should be spaced no greater than 12" o.c. for 1/2" thickness or 16" o.c. for 5/8" thickness.

In non-tile areas exposed to water or water condensation for prolonged periods, such as gang showers, processing plants, clean rooms and laboratories, apply a 6" wide strip of Sto Reinforcing Fiber Mesh or equivalent to angles and embed with Sto Flexyl® Ground Coat or equivalent.

Skim coat the entire surface with Sto Flexyl to achieve a flat and uniform surface. Prime with Sto Primer.

**Note: Results in a fine sanded texture.**

Use a two part or one part water reducible epoxy coating suitable for the use intended. Coating must be applied according to manufacturer's instructions and meet desired water vapor transmission rate.

In all steps, apply finishing materials according to manufacturers' instructions.

## Residential Steam Rooms

### DS013

DensShield Tile Backer can be used in residential steam rooms with a maximum floor areas size of 48 sq. ft. For information on larger areas, call the G-P Technical Hotline at 1-800-225-6119. For walls, steel or wood framing should be spaced no greater than 16" o.c. for 1/2" DensShield Tile Backer or 24" o.c. for 5/8" DensShield Tile Backer. For ceilings, board should be spaced no greater than 12" o.c. for 1/2" thickness or 16" o.c. for 5/8" thickness.

Apply DensShield Tile Backer to steam room wall and ceiling surfaces using corrosion-resistant nails or screws 6" o.c. along all framing members. All parts of the steam room shall be tiled. *Caution: Exposing untiled areas such as wallpaper, joint compound, drywall or untiled DensShield Tile Backer may result in unsatisfactory performance of these materials.*

Tap all corners and joints with a self-adhering glass mesh tape and embed with a latex modified dry-set (thin-set) mortar. Spot fasteners that were incidentally countersunk and other surface deformations. As an alternative, corners and joints may be finished with a liquid membrane manufacturer's taping procedures. See manufacturer's directions.

Seal around all penetrations and where DensShield Tile Backer meets dissimilar materials with a flexible silicone sealant. Avoid getting sealant on DensShield Tile Backer surface.

Apply a liquid waterproofing system approved for steam room applications directly over the entire DensShield Tile Backer surface, covering all fasteners, corners and joints.

Apply tile with a modified thin-set mortar per manufacturer's recommendations.

Use flexible silicone caulk as grout in all corners.

Use **unfaced** fiberglass insulation in wall cavity to retard heat transmission.

Do not install a moisture barrier behind DensShield Tile Backer.

**Operation and Maintenance** – The steam generation unit should be timer-controlled to avoid incidental lengthy exposure. Maintenance of grout and caulking of corners due to movement should be performed when required.

| Finishing Materials*    | Manufacturer                     |
|-------------------------|----------------------------------|
| Genesis® DM; DS 174     | Dryvit® Systems (1.800.556.7752) |
| Sto Flexyl®, Sto Primer | Sto Corp. (1.800.221.2397)       |
| ParFlex®                | Parex (1.800.537.2739)           |
| BASF Building Systems   | (1.800.221.9255)                 |
| Laticrete 9235          | Laticrete (1.800.243-4788)       |

\*Products may be substituted with equivalent products. Manufacturer must provide equivalency.

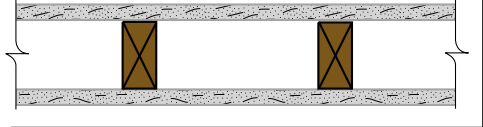
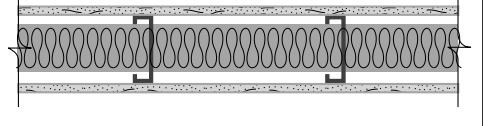
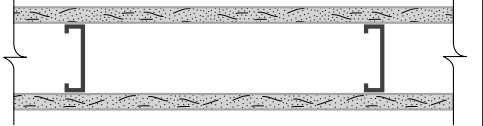
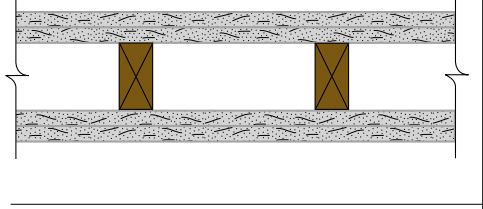
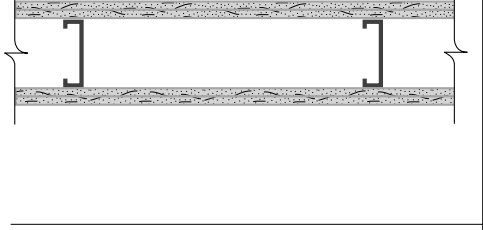
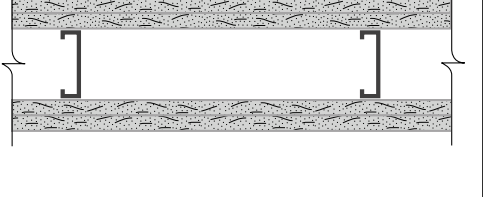
*Any installation recommendations of other manufacturers using DensShield Tile Backer as a component must be in accordance with the installation instructions contained in this brochure. Direct questions to the G-P Gypsum Technical Hotline at 1-800-225-6119. Or visit our Web site at [www.gpgypsum.com](http://www.gpgypsum.com). Georgia-Pacific Corporation is not responsible or liable for improper DensShield Tile Backer application.*



## Fire-Rated Assemblies

### DensShield® Fireguard™ Type X Tile Backer: The Ultimate Choice

- The only tile substrate to specify where a fire rating and moisture protection are necessary.
- The only high-performance tile substrate that protects a tile installation in wet areas while achieving a 1-hour fire rating.
- 5/8" DensShield Tile Backer meets Type X requirements.
- Tile is not required to achieve a 1- or 2-hour fire rating.
- Aligns perfectly with 5/8" Type X\* gypsum board and is UL Classified.

|  |   |
|--|---|
| <p><b>1-Hour Fire Rating</b><br/> <b>Test Reference: WHI 495-0853, UL U305</b></p>  | <p>30-34 STC Sound Trans. Test Reference: OR 64-8<br/>                 Partition Thickness: 4-3/4". Weight per Sq. Ft.: 7.0<br/>                 5/8" DensShield Fireguard (Type X) Tile Backer applied parallel or at right angles to 2 x 4 wood studs 16" o.c. with 1-7/8" phosphate coated nails 8" o.c. Joints staggered each side and covered with 2" wide 10 x 10 glass mesh tape and tile adhesive. (Load-bearing)</p>   |
| <p><b>1-Hour Fire Rating</b><br/> <b>Test Reference: CTC 1897-1655</b></p>          | <p>45-49 STC Sound Trans. Test Reference: Based on RAL TL69-42<br/>                 Partition Thickness: 3-1/2". Weight per Sq. Ft.: 5.0<br/>                 1/2" DensShield Tile Backer applied parallel to each side of 2-1/2" metal studs 16" o.c. with 1" Type S screws 8" o.c. at edge joints and 12" o.c. at perimeter and intermediate studs. Cavity filled with 3-1/2", 0.526 pcf, glass fiber batts friction fit in stud space. Joints covered with 2" wide 10 x 10 glass mesh tape and tile adhesive.</p>  |
| <p><b>1-Hour Fire Rating</b><br/> <b>Test Reference: CTC 2171-3996</b></p>         | <p>49 STC Sound Trans. Test Reference: RAL-TL00-125<br/>                 Partition Thickness: 4-5/8". Weight per Sq. Ft.: 6.0<br/>                 5/8" DensShield Fireguard (Type X) Tile Backer applied parallel or at right angles to each side of 3-5/8" metal studs 24" o.c. with 1-1/4" Type S drywall screws 8" o.c. to vertical studs and 12" o.c. to perimeter track. Stagger joints each side. Sound tested with 2-1/2" glass fiber batt insulation, friction fit.</p>  |
| <p><b>2-Hour Fire Rating</b><br/> <b>Test Reference: UL U301</b></p>              | <p>Partition Thickness: 6". Weight per Sq. Ft.: 13.8<br/>                 Base Layer: 5/8" DensArmor Plus™ Fireguard or 5/8" ToughRock® Fireguard gypsum board. Base layer attached horizontally or vertically to studs with 1-7/8" nails spaced 16" o.c.<br/>                 Face Layer: 5/8" DensShield Fireguard (Type X) Tile Backer applied horizontally or vertically. Face layer attached to studs over base layer with 2-3/8" nails spaced 8" o.c. Vertical joints located over studs. All joints in face layers staggered with joints in base layers. Joints of each base layer offset with joints of base layer on opposite side. (Load-bearing)</p>   |
| <p><b>2-Hour Fire Rating</b><br/> <b>Test Reference: CTC 1894-1530</b></p>        | <p>54 STC Sound Trans. Test Reference: Est.<br/>                 Partition Thickness: 4-1/2". Weight per Sq. Ft.: 8.0<br/>                 Base Layer: 1/2" DensArmor Plus Fireguard C or 1/2" ToughRock Fireguard C gypsum board applied parallel to each side of 2-1/2" metal studs 24" o.c. with 1" Type S screws 24" o.c.<br/>                 Face Layer: 1/2" DensShield Tile Backer applied parallel to each side of studs with 1-5/8" Type S screws 8" o.c. at edge joints, 12" o.c. at perimeter and intermediate studs. Stagger joints 24" o.c. each layer and side. Joints covered with 2" wide 10" x 10" glass mesh tape and tile adhesive. Sound tested with 2-1/2" glass fiber batt insulation, friction fit.</p> |
| <p><b>2-Hour Fire Rating</b><br/> <b>Test Reference: UL U411</b></p>              | <p>57 STC Sound Trans. Test Reference: RAL-TL00-122<br/>                 Partition Thickness: 6-1/4". Weight per Sq. Ft.: 9.0<br/>                 Base Layer: 5/8" DensArmor Plus Fireguard or 5/8" ToughRock Fireguard C gypsum board applied parallel to each side of 2-1/2" metal studs 24" o.c. with 1" Type S screws 16" o.c.<br/>                 Face Layer: 5/8" DensShield Fireguard (Type X) Tile Backer applied parallel to each side of studs with 1-5/8" Type S screws 16" o.c. at edge joints, 12" o.c. at perimeter and intermediate studs. Stagger joints 24" o.c. each layer and side. Sound tested with 2-1/2" glass fiber batt insulation, friction fit.</p>  |

\*For fire safety information, visit [www.gp.com/gypsum/firesafety](http://www.gp.com/gypsum/firesafety)

## Architectural Specifications

### Part 1 – General

#### 1.0 Description

Work in this section includes, but is not limited to:

- Backer board for ceramic tile and untiled installation on walls and ceilings.
- Underlayment for ceramic tile installation on indoor floors.
- Substrate for ceramic tile installation on countertops.

Related work specified elsewhere:

- |                  |               |          |
|------------------|---------------|----------|
| Rough carpentry  | Ceramic tile  | Grout    |
| Finish carpentry | Tile adhesive | Painting |

#### 1.1 Submittals

Product data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance and that product meets specified requirements.

#### 1.2 Quality Assurance

Fire resistance ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire resistance ratings are indicated.

#### 1.3 Delivery, Storage and Handling

Delivery: Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible.

Storage and handling: Store and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage to edges. Provide air circulation under covering and around stacks of materials.

#### 1.4 Limitations

Apply tile only to gray side of DensShield panels.

Do not use DensShield Tile Backer where there is prolonged exposure to temperatures exceeding 125°F.

Do not use DensShield Tile Backer where there is continuous exposure to extreme conditions, e.g., saunas, commercial steam rooms and radiant barriers at fireplaces.

Do not install vapor retarders directly behind DensShield panels. Although DensShield does not require a moisture barrier, a #15 felt behind the DensShield is permissible if required by local code jurisdiction.

Do not use DensShield Tile Backer in conjunction with passive solar heat systems.

Do not use DensShield panels as a base for nailing and mechanical fastening.

Do not use DensShield Tile Backer in floor tile installation using tile having less than 2" x 2" face dimensions.

A subfloor of Exposure-1 APA-rated plywood floor panels with a thickness of 5/8" is recommended. But Exposure-1 APA-rated OSB floor panels having a thickness of 3/4" are acceptable. The subfloor should be applied over joists spaced 16" o.c. or engineered lumber spaced 19.2" o.c. maximum with an L/360 deflection limitation for the span, including live and dead loads. Joists can be spaced 24" o.c. maximum when using 7/8" tongue-and-groove plywood subfloor (L/360 deflection limitation).

Do not apply DensShield Tile Backer directly to concrete or masonry block. Framing or furring of wall is necessary.

Not for exterior use.

Do not use Type I organic mastics for floor applications. DensShield Tile Backer should not be used as a backer for resilient flooring.

Do not place DensShield Tile Backer into shower pan mortar bed. Leave minimum 1/8" gap and fill with 100% silicone caulk.

Do not use wallboard joint compound or paper tape in wet areas.

Do not install DensShield Tile Backer on shower floors or in shower curbs.

### Part 2 – Products

#### 2.0 Tile backer

Acceptable products: Georgia-Pacific Corporation, 1/4" or 1/2" DensShield Tile Backer; Georgia-Pacific Corporation, 5/8" DensShield Fireguard Type X Tile Backer.

Size: 1/4" DensShield Tile Backer: 4' x 4'. 1/2" DensShield Tile Backer: 32" x 5', 4' x 5' and 4' x 8'. 5/8" DensShield Fireguard Type X Tile Backer: 4' x 8'.

Composition: Water-resistant treated core with glass mat moisture protectant coating and glass mats, both sides. The face side is surfaced with heat-cured copolymer water-resistant coating.

Fire resistance, 5/8" DensShield Fireguard Type X Tile Backer: Type X when tested in accordance with ASTM E 119, UL classified.

Standards: ASTM C 1178

## 2.1 Accessories

Trim: Sheet steel, galvanized.

Wood framing fasteners: Nails: 11-gauge galvanized nails with 7/16" head, hot dipped. Screws: Type W or Type S, Hi-Lo, bugle head, rust resistant.

Metal framing fasteners: Screws: Light-gauge metal framing – Type S, bugle or wafer head, self-tapping, rust resistant. Heavy-gauge metal framing – Type S-12, bugle or wafer head, rust resistant.

## 2.2 Joint Treatment Materials

Joint tape: 2" wide 10 x 10 glass mesh tape.

Reinforcing fabric: Balanced, alkali-resistant, open-weave, glass fiber fabric, made from continuous multi-end strands with tensile strength of not less than 120 lbs. and 140 lbs. in warp and fill directions, respectively, per ASTM D 1682 and complying with ASTM D 578, and of 4.30 oz./sq. yd. minimum weight.

Setting-type joint compound: Untiled, non-wet areas: ToughRock setting compounds.

Tile setting material: Mastics or mortars, organic adhesive ANSI A136.1, dry set ANSI A118.1, latex portland cement mortar ANSI A118.4.

## 2.3 High-Humidity and Wet-Area Untiled Finish System Materials

Acceptable manufacturers: Dryvit Systems – Genesis® DM, DS174 or comparable. Sto Corporation – F-477, Flexyl® or comparable. Parex – ParFlex® or comparable. Synergy – Xtra-Stop® or comparable.

Ground coat: Job-mixed formulation of portland cement complying with ASTM C 150, Type I, white or natural color, and system manufacturer's standard polymer-based adhesive designed for use indicated.

Primer: System manufacturer's standard primer.

Finish coat for high-humidity areas: System manufacturer's standard mixture, factory-mixed formulation of polymer emulsion admixture, colorfast mineral pigments, ground stone particles and fillers.

Finish coat for wet areas: Water-reducible epoxy coating system specified for wet areas.

## Part 3 – Execution

### 3.0 General

Provide DensShield Tile Backer where indicated on drawings using fastening systems specified.

Use maximum lengths possible to minimize number of joints. Stagger end joints and edge joints. Attach DensShield panels to framing with fasteners recommended by tile backer manufacturer, spaced 6" o.c. Butt ends and edges.

Locate control and expansion joints at same locations as substrate and where required by finishes. Expansion joints for tile and non-tile applications: Walls – Expansion joints not to exceed every 30 lineal feet of continuous wall or as specified by designing authority. Ceilings – Not to exceed every 30 feet of continuous ceiling surface without perimeter relief or a maximum of 900 sq. ft., not to exceed every 50 feet of continuous ceiling surface with perimeter relief or a maximum of 2,500 sq. ft., or as specified by designing authority.

### 3.1 Tile backer

Wall and ceiling installations: On walls, install DensShield panels vertically or horizontally. On ceilings, install DensShield panels perpendicular to framing. Install tile backer in accordance with manufacturer's recommendations and TCA Handbook for Ceramic Tile Installation, Method W245 and C311.

Residential and light commercial floors: Install DensShield panels in accordance with manufacturer's recommendations as applicable in TCA Handbook for Ceramic Tile Installation, Method F146.

Countertops: Install DensShield panels in accordance with manufacturer's recommendations and TCA Handbook for Ceramic Tile Installation, Method C513.

Bathubs: Install DensShield panels in accordance with manufacturer's recommendations and TCA Handbook for Ceramic Tile Installation, Methods W245 and B419.

Showers: Install DensShield panels in accordance with manufacturer's recommendations and TCA Handbook for Ceramic Tile Installation, Methods W245 and B420 for thin-set installation and mastic installation.

Finishing: Substrate for tile – Apply glass mesh joint tape over joints. Embed tape in setting material indicated for specified tile finishes. Allow joints to dry prior to installing tile systems. Substrate for paint and wall coverings, dry areas (untiled) – Apply glass mesh joint tape over joints. Embed tape in setting-type joint compound specified. Apply skim coat of setting-type joint compound over surface of tile backer for smooth finish. Substrate for high-humidity finish systems (untiled) – Apply 6" wide reinforcing fabric over joints. Embed fabric in ground coat. Skim-coat tile backer surface with ground coat for smooth finish. Apply in accordance with finish coat manufacturer's instructions. Substrate for wet area, water reducible epoxy coating finish (untiled) – Apply 6" wide reinforcing fabric over joints. Embed fabric in ground coat. Skim-coat with ground coat and compatible primer. Apply epoxy coatings specified as finishing step with epoxy coating system specified.

### 3.2 Accessories

Install accessories where indicated and in accordance with tile backer manufacturer's instructions.

## DensArmor Plus™ Paperless Interior Drywall

DensArmor Plus is a new generation paperless drywall designed as a replacement for paper-faced drywall for building interiors. DensArmor Plus drywall incorporates glass mats on the surfaces of the drywall panel instead of paper facings found on traditional drywall. The combination of paperless surfaces and a moisture resistant core provides superior moisture- and mold-resistance when compared to traditional paper-faced drywall. G-P Gypsum offers a **three-month in-place exposure warranty** which means DensArmor Plus can be hung before installing doors and windows. DensArmor Plus installs using the same steps as traditional drywall.

## DensGlass Gold® Exterior Sheathing

DensGlass Gold exterior sheathing is a moisture-resistant gypsum panel that can be used for exterior walls, ceilings and soffits. Its paperless, glass-mat facings and moisture-resistant core resist the effects of surface water exposure while providing resistance to mold. With a long established track record, DensGlass Gold sheathing is so weather resistant that it is backed with a **six-month in-place exposure warranty**. DensGlass Gold is the preferred sheathing for use under brick, stone, stucco and EIFS siding materials. DensGlass Gold sheathing is so widely used that its bright GOLD™ color is recognized throughout the industry.

## DensShield® Tile Backer

DensShield tile backer is a patented substrate for floor, wall and ceiling ceramic tile installations. Designed with a built-in moisture barrier, DensShield protects tile installations and the wall cavity from the effects of moisture in damp areas such as bathrooms and kitchens. Incorporating glass-mat facings and a moisture resistant core, DensShield is lighter and easier to install than heavy, hard-to-work-with cement board tile backers. The combination of moisture and mold resistance, along with potential labor savings, makes DensShield the superior substrate for ceramic tile in the industry. Georgia-Pacific backs DensShield tile backer with a **lifetime limited warranty when used in residential tile installations**. In addition, DensShield offers a **20 year limited warranty** for its use in commercial applications.

## DensGlass Ultra™ Shaftliner

DensGlass Ultra Shaftliner is the ideal component for gypsum board shaft wall/stairwell and area separation wall systems when a fire rating is required. DensGlass Ultra Shaftliner incorporates a moisture and mold resistant, non-combustible gypsum core with paperless glass-mat facings to resist exposure to the elements during the early stages of the construction cycle. Backed by a **six-month in-place exposure warranty**, DensGlass Ultra Shaftliner is the perfect substitute for heavy, expensive masonry construction. It also offers superior moisture and mold resistance compared to traditional paper-faced shaftliner wallboard products.

## DensDeck® Roof Board

Versatile DensDeck roof board is utilized in a wide variety of roofing systems for new and re-roofing applications as cover boards, overlays, underlayments and separator boards. Featuring a combination of fire resistance, strength, moisture resistance and dimensional stability, DensDeck roof board enhances the overall performance of most roofing assemblies and is widely respected and specified by leading roofing system manufacturers. DensDeck roof board, with its paperless glass-mat facings, has been shown to withstand delamination, deterioration, warping and job site damage far more effectively than paper-faced gypsum board or other conventional roofing products, such as wood fiberboard and perlite.

## DensDeck Prime® Roof Board

DensDeck Prime roof board from G-P Gypsum combines the superior features of DensDeck roof board, including fire resistance, strength, moisture resistance and dimensional stability, with an enhanced surface treatment. The coated surface of DensDeck Prime provides an ideal substrate for a wide variety of adhered roofing systems by allowing a uniform spread of adhesives, which results in a strong, consistent bond. DensDeck Prime can be used in cold mastic, torch applied modified bitumen as well as fully-adhered, single-ply systems.

## DensDeck DuraGuard® Roof Board

DensDeck DuraGuard roof board from G-P Gypsum combines the superior features of DensDeck roof boards, including fire resistance, strength, moisture resistance and dimensional stability, with a durable, low perm, integrated coating. This coating provides an ideal substrate for a wide variety of adhered roofing systems, including self-adhered, hot-mopped membranes, and torched asphaltic systems. The coating assures more uniform spreading of adhesives, an excellent coverage rate, and it enhances the bond strength of membrane system-to-board without the need for field priming with a number of systems.



### SALES INFORMATION AND ORDER PLACEMENT

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**  
South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**  
Quebec Toll Free: **1-800-361-0486**

G-P Gypsum Technical Hotline: U.S.A. and Canada: **1-800-225-6119**



**TRADEMARKS** DENS, DENSARMOR PLUS, DENSDECK, DENSDECK DURAGUARD, DENSDECK PRIME, DENSGLASS GOLD, DENSGLASS ULTRA, DENS SHIELD, FIREGUARD, TOUGHROCK and the color GOLD are trademarks of Georgia-Pacific Corporation or one of its subsidiaries. GENESIS and DRYVIT are trademarks Dryvit. STO FLEXYL is a trademark of Sto Corporation and PARAFLEX is a trademark of Parex. STURD-I-FLOOR is a trademark of APA – The Engineered Wood Association.

**UPDATES AND CURRENT INFORMATION** The information in this document may change without notice. Visit our website for updates and current information.

**LIMITATION OF REMEDIES AND DAMAGES** Unless otherwise stated in our written limited warranty for these products, our sole liability for any product claim shall be limited to reimbursement of the cost of repair or replacement of the affected product, up to a maximum amount of two times the original purchase price for the affected product. We shall not be responsible under any circumstances for lost profits, damage to a structure or its contents, or indirect, incidental, special or consequential damages. Claims shall be deemed waived if they are not submitted to us in writing within ten days after discovery.

**SAFETY CAUTION:** Some products contain fiberglass. Fibers and dust may be released from these products during normal handling and may result in skin, eye and respiratory irritation. Avoid breathing dust and contact with the skin and eyes. Follow these standard work practices: Wear a loose-fitting, long-sleeved shirt and long pants, protective gloves and eye protection (goggles or safety glasses with side shields). Wear a dust mask when sanding. Additional protection may be needed when very dusty. Do not use a power saw. For Material Safety Data Sheet or additional information, call 1-800-225-6119 or visit our website.



Some of our products have been certified by Scientific Certification Systems (SCS). SCS is an internationally recognized third-party evaluation, testing and certification organization. Its program spans a wide cross-section of the economy, including manufacturing and retailing, consumer products, the energy industry, and the home improvement and construction sectors. For details on specific G-P Gypsum products and plants, please contact our Technical Hotline at 800-225-6119.