

## It's ready for what's next

Helps make every project easier, faster and more reliable. DensShield® Tile Backer delivers the strength and durability professionals count on, whether it's for floors, walls or ceilings. Choose DensShield® Tile Backer — a smarter, more efficient way to build with confidence.

### Ready to Learn More?

For additional details and guidance, refer to the following resources:



#### Overview Brochure

Product highlights, key features and benefits, and ideal applications



#### Q&A Brochure

Answers to the most commonly-asked install and application questions



#### Installation Guide

Step-by-step instructions for proper installation of DensShield® Tile Backer



#### Warranties

Find warranties for residential and commercial construction

Find these resources and more information about DensShield® Tile Backer at [www.buildgp.com/densshield](http://www.buildgp.com/densshield).

#### Questions? Connect with our Sales and Technical Team:

##### U.S.A.

North: 1-800-947-4497  
South: 1-800-327-2344  
Central: 1-800-231-6060 x 7709  
Midwest: 1-800-876-4746  
Pacific Northwest: 1-800-444-0092  
Pacific Southwest: 1-800-824-7503

##### CANADA

Canada Toll Free:  
1-800-387-6823

##### TECHNICAL HOTLINE

U.S.A. and Canada:  
1-800-225-6119



For full warranty information, refer to the DensShield® Tile Backer Limited Warranty

For product fire, safety and use information, visit [www.buildgp.com/safetyinfo](http://www.buildgp.com/safetyinfo)

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## Technical Guide



With its built-in moisture barrier, DensShield® Tile Backer offers contractors, tile installers, and DIY's a smarter, more efficient solution. Whether you're working on walls, ceilings, floors or countertops, DensShield® Tile Backer delivers proven reliability and performance.

Dry Area Walls  
Ex: Back Splashes, Countertops, and Ceilings

Application	DensShield® Tile Backer Thickness	Fastener Type	Minimum Fastener Length	Fastener Spacing
Walls and ceilings over wood framing	1/2"	Galvanized* roofing nail	1-1/2" (38 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	5/8"	Galvanized* roofing nail	1-3/4" (45 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	1/2"	Drywall screws – bugle head, rust resistant*, coarse thread, sharp point screw	1-1/4" (32 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	5/8"	Drywall screws – bugle head, rust resistant*, coarse thread, sharp point screw	1-5/8" (41 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	1/2"	Drywall screws – bugle head, rust resistant*, coarse thread, sharp point screw	1-1/4" (32 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	5/8"	Drywall screws – bugle head, rust resistant*, coarse thread, sharp point screw	1-5/8" (41 mm)	8" (203 mm) o.c. along framing



FASTENER CHARTS

Wet Area Walls  
Ex: Shower and Tub Surrounds

Application	DensShield® Tile Backer Thickness	Fastener Type	Minimum Fastener Length	Fastener Spacing
Walls and ceilings over wood framing	1/2"	Deck Screws or Exterior Screws, Ceramic coated*, bugle head	1-1/4" (32 mm)	8" (203 mm) o.c. along framing
Walls and ceilings over wood framing	5/8"	Deck Screws or Exterior Screws, Ceramic coated*, bugle head	1-3/4" (45 mm)	8" (203 mm) o.c. along framing

Floors

Application	DensShield® Tile Backer Thickness	Fastener Type	Minimum Fastener Length	Fastener Spacing
Floors over wood subfloor	1/4" & 1/2"	Drywall screws – bugle head, rust resistant*, coarse thread, sharp point screw	1-1/4" (32 mm)	6" (152 mm) in all directions
Floors over wood subfloor	1/4" & 1/2"	Galvanized* roofing nail	1-1/4" (32 mm)	6" (152 mm) in all directions
Floors over wood subfloor	1/4"	1/4" (6 mm) Crown staple, corrosion resistant* chisel point	7/8" (922 mm)	6" (152 mm) in all directions

\*Contact fastener manufacturer for proper level of corrosion resistance. Screws should meet ASTM C1002 or ASTM C954

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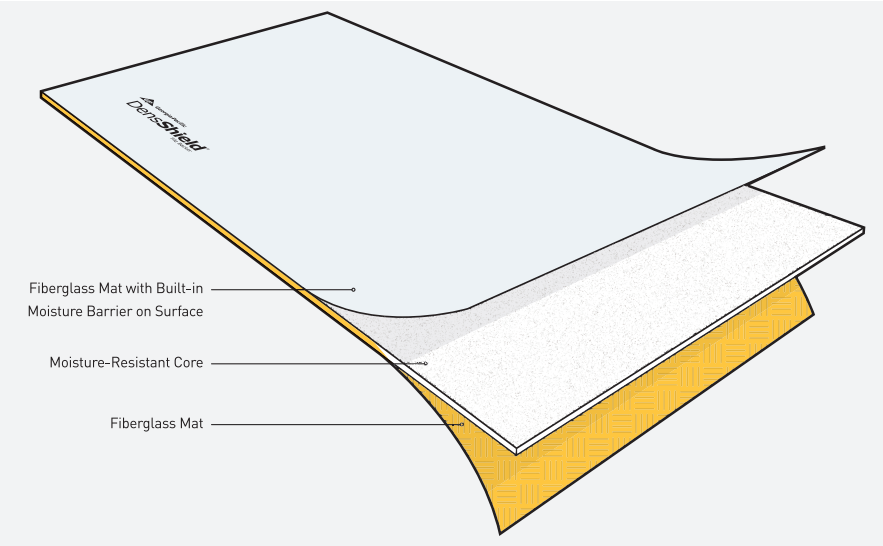


PRODUCT DESCRIPTION

With its built-in moisture barrier, DensShield® Tile Backer helps to simplify tile installations while safeguarding your projects against moisture, mold and mildew.<sup>1</sup>

Two-Sided Protection

Fiberglass mats on front and back with a moisture resistant acrylic coating on the surface helps to reinforce moisture, mildew, and mold resistance



1. No material can be considered moldproof. When properly used with good design, handling and construction practices, our Dens® Suite of Gypsum Products provides increased moisture and mold resistance compared to standard paper-faced wallboard products.

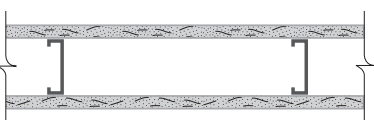
Water-Resistant Core

Manufactured with a treated, water-resistant and mold-resistant gypsum core



1-Hour Fire Rating

Design Reference:  
UL U465, ULC W415, cUL U465



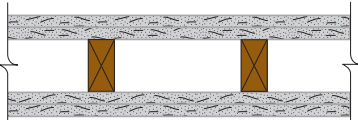
49 STC Sound Trans.

Test Reference: RAL-TL00-125  
Partition Thickness: 4-5/8" (118 mm)  
Weight per Sq. Ft.: 6.0 psf (29 Kg/m2 )

5/8" (15.9 mm) DensShield® Tile Backer applied vertically or horizontally (U465 only) to each side of 3-5/8" (92 mm) steel studs 24" (610 mm) o.c. with 1-1/4" (32 mm) Type S drywall screws 8" (203 mm) o.c. to vertical studs and 12" (305 mm) o.c. to perimeter track. Stagger joints each side. Sound tested with 2-1/2" (64 mm) fiberglass batt insulation, friction fit.

2-Hour Fire Rating

Design Reference:  
UL U301, cUL U301



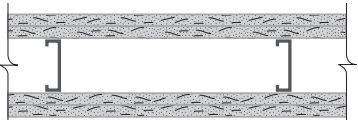
Partition Thickness: 6" (152 mm)  
Weight per Sq. Ft.: 13.8 psf (67 Kg/m2 )

Base Layer: 5/8" (15.9 mm) DensArmor Plus® interior panels or 5/8" (15.9 mm) ToughRock® Gypsum Board.  
Base layer attached horizontally or vertically to studs with 1-7/8" (48 mm) nails spaced 16" (406 mm) o.c.

Face Layer: 5/8" (15.9 mm) DensShield® Tile Backer applied horizontally or vertically. Face layer attached to studs over base layer with 2-3/8" (60 mm) nails spaced 8" (203 mm) 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)

2-Hour Fire Rating

Design Reference:  
UL U411, cUL U411



57 STC Sound Trans.

Test Reference: RAL-TL00-122  
Partition Thickness: 6-1/4" (159 mm)  
Weight per Sq. Ft.: 9.0 psf (44 Kg/m2 )

Base Layer: 5/8" (15.9 mm) DensArmor Plus® panels or 5/8" (15.9 mm) ToughRock® Gypsum Board applied vertically to each side of 2-1/2" (64 mm) steel studs 24" (610 mm) o.c. with 1" (25 mm) Type S screws 16" (406 mm) o.c.

Face Layer: 5/8" (15.9 mm) DensShield® Tile Backer applied vertically to each side of studs with 1-5/8" (41 mm) Type S screws 16" (406 mm) o.c. at edge joints, 12" (305 mm) o.c. at perimeter and intermediate studs. Stagger joints 24" (610 mm) o.c. each layer and side. Sound tested with 2-1/2" (64 mm) fiberglass batt insulation, friction fit.





FIRE-RATED ASSEMBLY

5⁄8" (15.9 mm) DensShield® Tile Backer is a great choice where tile finish is desired, and a fire-rated assembly is required. Tile is not required to be used with 5⁄8" (15.9 mm) DensShield® Tile Backer to achieve a 1- or 2-hour fire rating. Minimum 20-gauge (33 mils) steel stud required when fire-rated assembly is finished with tile.

5⁄8" (15.9 mm) DensShield® Tile Backer is UL and ULC certified as **Type DS** and included in numerous assembly designs investigated by UL and ULC for hourly fire resistance ratings.

In addition, 5⁄8" (15.9 mm) DensShield® Tile Backer is certified as **"Type X"** in accordance with ASTM C1178 and may replace 5⁄8" (15.9 mm) gypsum panels specified as Type X in generic fire-rated wall assemblies. It also aligns perfectly with 5⁄8" (15.9 mm) Type X gypsum board. Generic systems in the GA-600 Fire Resistance Design Manual are applicable to the products of any manufacturer, including Georgia-Pacific Gypsum, provided they meet certain standards set forth in such manual, such as Type X gypsum board per applicable ASTM standard with specified thickness and size described in the design. "Type X" as used in this technical guide designates gypsum board manufactured and tested in accordance with specific ASTM standards for increased fire resistance beyond regular gypsum board. Please consult the ASTM standard for the specific product (for example, ASTM C1178 for coated glass mat gypsum panel) for further information and significance of use. When tiling, refer to the Fastener Chart on page 2.

The following design assemblies are for illustrative purposes only. Consult the appropriate fire resistance directory or test report for complete assembly information. For additional fire safety information concerning DensShield® Tile Backer, visit [www.buildgp.com/safetyinfo](http://www.buildgp.com/safetyinfo).

1-Hour Fire Rating

Design Reference: WHI 495-0853,  
UL U305, ULC W301, cUL U305



30-34 STC Sound Trans.

Test Reference: OR 64-8  
Partition Thickness: 4-3⁄4" (121 mm)  
Weight per Sq. Ft.: 7.0 psf (34 Kg/m2 )

5⁄8" (15.9 mm) DensShield® Tile Backer applied vertically (ULC W301) or horizontally (UL U305) to 2" (51 mm) x 4" (102 mm) wood studs 16" (406 mm) o.c. with 1-7⁄8" (48 mm) phosphate-coated nails 8" (203 mm) o.c. Joints staggered each side and covered with 2" (51 mm) wide fiberglass mesh tape and tile adhesive. (Load-bearing)



PHYSICAL PROPERTIES

Properties	1⁄4" (6.4mm) DensSheild® Tile Backer	1⁄2" (12.7mm) DensSheild® Tile Backer	5⁄8" (15.9mm) DensSheild® Tile Backer
Width, standard³	4' (1220 mm) 3⁄32" (2.4 mm)	4' (1220 mm), 32" (813 mm)	4' (1220 mm)
Length, standard³ ± 1⁄4" (6.4 mm)	4' (1220 mm)	5' (1524 mm) 1⁄4" (6.4 mm) 8' (2438 mm)	8' (2438 mm) 1⁄4" (6.4 mm)
Edges	Square	Square	Square
Weight¹ nominal, lbs./sq. ft. (Kg/m2)	1.6 (7.8)	2.0 (9.8)	2.5 (12.2)
Bending Radius⁴	8' (2438 mm)	12' (3658 mm)	16' (4877 mm)
Fire Classification	n/a	n/a	Type X (ASTM C 1178), UL and ULC certified*
Permeance⁵, perms (ng/Pa•s•m2)	<1.5 (86)	<1.5 (86)	<1.5 (86)
R Value², ft2•°F•hr/BTU (m2•K/W)	0.56 (0.098)	0.56 (0.098)	0.67 (0.118)
Standards	ASTM C1178	ASTM C1178	ASTM C1178
Code Evaluation	DensShield® Tile Backer is manufactured to meet ASTM C1178 and is accepted for use as a tile backer in tub and shower areas in accordance with current IBC and IRC codes. DensShield® Tile Backer holds an Intertek Code Compliance Research Report CCRR-0334 product approval.		
TCNA Recognition	ASTM C627 (Robinson Floor Test); Floors – F146, F151; Radiant Floor – RH135; Walls – W221, W222, W223, W242, W243, W245, W428; Ceilings – C311, C312, C315; Tubs – B413, B419, B441; Showers – B420; Countertop – C513 Fastener Guide		

\* Consult the UL and ULC Directories for approved use. | 1 Represents approximate weight for design and shipping purposes. Actual weight may vary based on manufacturing location and other factors. | 2 Tested in accordance with ASTM C518.. | 3 Specified values per ASTM C1178. | 4 Double fasteners on ends as needed. | 5 Tested in accordance with ASTM E96 (drycup method). Perm rating for DensShield® Tile Backer only. Tile applications will have lower perm.



## DELIVERY, HANDLING AND STORAGE

DensShield® Tile Backer should be kept dry and stored inside. Gypsum panel products shall be neatly stacked flat with care taken to prevent sagging or damage to edges, ends and surfaces. Gypsum panel products shall be properly supported on risers on a level platform, and fully protected from weather, direct sunlight exposure, and condensation. Gypsum panel products shall be stacked flat rather than on edge or end.

**WARNING:** Gypsum panel products stacked on edge or end can be unstable and present a serious hazard in the workplace should they accidentally topple. Refer to Handling Gypsum Panel Products, GA-801, for proper storage and handling requirements.



### Percolation Test

The percolation test helps determine if an additional moisture barrier should be installed. The test consists of a 2" (51 mm) diameter tube, 48" (1220 mm) long, bonded to test samples with silicone sealant. The tube is filled with water and after 48 hours, the remaining water is measured (minus evaporation). During testing 1/8" (3 mm) of water passed through DensShield® Tile Backer, 19" (483 mm) of water passed through one cementitious tile substrate sample and 43" (1092 mm) of water passed through another sample of cement board. The test demonstrates DensShield® Tile Backer stops water at the surface, while cement boards allow water to pass through their porous construction. The Tile Council of North America requires the use of a moisture barrier in wet areas for cement backer boards but does not require a vapor retarder for DensShield® Tile Backer since DensShield® panels have a built-in moisture barrier that stops moisture at the panel surface.

### Mold Resistance Test

When tested, as manufactured, in accordance with ASTM D3273, DensShield® Tile Backer has scored a 10, the highest level of performance for mold resistance under the ASTM D3273 test method. The score of 10, in the ASTM D3273 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, Dens® Brand gypsum products provide increased mold resistance compared to standard paper-faced wallboard. For more information, go to [www.buildgp.com/safetyinfo](http://www.buildgp.com/safetyinfo).



## TESTING AND CODE RECOGNITION

### Robinson Floor Test/ASTM C627

DensShield® Tile Backer has passed the industry standard test conducted by the Tile Council of North America for residential and light commercial floors. This test measures the load strength of the tile floor assembly.

### Tile Adhesion Bond Testing

CTC-Geotek conducted tests comparing adhesion capabilities using various setting materials. The tests concluded that bonds with DensShield® Tile Backer were as good, if not better, than bonds with cement board.

### Standards and Code Compliance

DensShield® Tile Backer in ¼" (6.4 mm), ½" (12.7 mm) and ⅝" (15.9 mm) thicknesses conforms to current IRC and IBC codes and is manufactured to meet ASTM C1178 as a fiberglass mat gypsum substrate for use as tile backer. DensShield® Tile Backer has an Intertek Code Compliance Research Report CCRR-0334.

DensShield® Tile Backer assembly installation information is listed as coated glass mat water-resistant gypsum backer board in the current Tile Council of North America (TCNA) Handbook for Ceramic Tile Installation.

### Water Vapor Transmission

ASTM E96 test method intends to measure the rate of water movement through a material's surface over a period of time, commonly called vapor permeability. This is accomplished under controlled conditions of temperature and humidity. It is used to assess the passage of water vapor through paper, plastic films, other sheet materials, fiberboards, wood products, gypsum and plaster products. DensShield® Tile Backer is very low perm, 1.5 perm and is considered vapor semi-impermeable.

## GEORGIA-PACIFIC GYPSUM AND SUSTAINABILITY

Georgia-Pacific Building Product's definition of sustainability is meeting the needs of society today without jeopardizing our ability to do so in the future. We are committed to using resources efficiently to provide innovative products and solutions that meet the needs of customers and society, while operating in a manner that is environmentally and socially responsible, and economically sound.

We continue to focus on:

- Improving energy efficiency at our manufacturing plants
- Seeking out opportunities to reduce water use, and to reuse water more efficiently
- Seeking new ways to reduce and improve air emissions
- Ensuring responsible resource management through material recovery and source reduction innovation

Green building codes, standards, and programs are establishing themselves across the country. They promote the use of products that contribute to the performance of the building, along with minimizing environmental and human health impacts over the life of the building or home. Because we embrace product performance and operate in an environmentally, socially, and economically sound manner, owners and architects can feel good about the structures they build using our products.

Many of our products contribute to LEED® and other green building programs. Please refer to the LEED® Request link: LEED® Request Form - Georgia-Pacific Building Products (buildgp.com) to get recycled content, low-emitting material and regional material information for your project. For general sustainability information, visit [buildgp.com/sustainability](http://buildgp.com/sustainability).





## WATERPROOFING

Additional waterproofing can be topically applied to DensShield® Tile Backer if desired. For installation instructions of finishing and waterproofing systems, please contact the manufacturers of the product. Georgia-Pacific Gypsum is not responsible or liable for improper DensShield® Tile Backer Application.

### Interior Waterproofing System Examples

#### Waterproofing Manufacturer\*

Laticrete Intl., Inc.	(1.800.243.4788)
Mer-Krete Systems	(1.800.851.6303)
Noble Company	(1.800.878.5788)
Mapei	(1.800.426.2734)

\*This is not intended to be a full and complete list. Please contact finishing or waterproofing manufacturer for use of their products over DensShield® Tile Backer.



## RECOMMENDATIONS AND LIMITATIONS FOR USE

DensShield® Tile Backer is for interior use only.

Tiles should always be applied to gray side.

DensShield® Tile Backer panels should not be used as a base for nailing and mechanical fastening.

Vapor retarders should not be installed behind DensShield® Tile Backer panels, however, #15 felt behind DensShield® Tile Backer is permissible if required by local code jurisdiction.

Additional waterproofing systems may be installed over the face of DensShield® Tile Backer panels.

All-purpose joint compound, setting-type joint compound or paper tape should not be used in wet areas.

DensShield® Tile Backer should not be used as a radiant barrier behind fireplaces.

DensShield® Tile Backers should not be applied directly to concrete or masonry block. Framing or furring of the wall is necessary.

DensShield® Tile Backer should not be used in conjunction with passive solar heat systems.

Georgia-Pacific Gypsum does not have testing or installation instructions for DensShield® Tile Backer and tile applications over equivalent or effective gauge steel studs. When equivalent or effective gauge studs are used, please contact stud manufacturer for acceptability of their proprietary studs for use with tile applications.

There is not a weight limit for tile applications over DensShield® Tile Backer, however when installing 3/8" (9.5 mm) ceramic tile over DensShield® Tile Backer, the stud wall needs to be designed with the required deflection requirements. The tile adhesive manufacturer can recommend the appropriate tile adhesive based on the size of tile and location of use.