



# DENS-SHIELD®

## THE ULTIMATE TILE BACKER

### MANUFACTURER

Georgia-Pacific Corporation  
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Atlanta, GA 30303  
Technical Hotline: 1 (800) 225-6119 (8-6 ET)

### DESCRIPTION

Dens-Shield® tile backer is a substrate that, when properly installed, is virtually unaffected by water or moisture vapor—making it excellent for protecting both tile installations and stud cavities. Dens-Shield is composed of a proprietary, water-resistant treated core that is covered front and back with glass mats. The embedded mats are permanently integrated with the core during manufacturing, preventing delamination problems commonly associated with greenboard. On the face side, Dens-Shield's exclusive heat-cured acrylic coating stops surface water and retards vapor transmission, protecting the stud cavity.

Unlike cementitious backer boards, Dens-Shield does not require a separate water barrier. Dens-Shield is 17 to 32 lbs. lighter per panel, depending on panel size, than cement board, which makes installation easier. Dens-Shield provides excellent dimensional stability and strength so it can be installed parallel or at right angles to framing in wall and ceiling applications.

Dens-Shield tile backer, with its patented, inorganic glass mat design, has been independently tested (ASTM D 3273) and shown to be the most mold and mildew resistant sheathing product on the market.

### PRIMARY USES

Dens-Shield tile backer has been shown to be excellent for tile and non-tile installations in wet and non-wet applications, in areas of high humidity, and in fire-rated wall assemblies. It is ideal for interior walls, ceilings, residential and light commercial floors and countertop applications in high moisture areas such as baths, showers, kitchens, laundries, swimming pool areas and locker rooms.

Dens-Shield provides an excellent backer for sidewalls and ceilings in bathtub and shower installations, where it provides an even, solid substrate for tile. Dens-Shield may also be finished with paint or wallpaper for non-tile areas that require superior fire and moisture resistance where its vapor barrier and water-repelling qualities are desirable. Dens-Shield also adds stabilizing and fire-resistant qualities to countertop installations.

1/4" and 1/2" Dens-Shield can be used as a substrate in floor tile applications for residential and light commercial use as defined in the

*Handbook for Ceramic Tile Installation* by the Tile Council of America.

### LIMITATIONS

Tiles should be applied on the gray coated side of Dens-Shield.

Dens-Shield should not be used in commercial saunas, steam rooms, around fireplaces or areas where prolonged exposure to heat exceeds 125°F.

Dens-Shield should not be used as a shower pan base.

Dens-Shield should not be used for exterior installations.

Dens-Shield should not be used as a base for nailing and mechanical fastening.

Dens-Shield should not be used in conjunction with passive solar heat systems.

For floors, use floor grade tile, 2" x 2" or larger.

Dens-Shield should not be used in wall or ceiling tile applications with tile larger than 3/8" x 14" x 14".

Use framing or furring when applying over concrete or block.

Adhesives alone should not be used to install Dens-Shield. Nails or screws may be used alone or in combination with adhesives.

Since Dens-Shield has a built-in moisture barrier, never install vapor retarders directly behind the tile backer. In retrofit applications, some paints or other wall coverings may constitute a vapor barrier; remove or effectively penetrate these coverings prior to installing Dens-Shield.

Dens-Shield should not be used in shower floors or curbs or horizontal surfaces such as seats, unless properly treated with a water-proof membrane per TCA recommendations.

### TECHNICAL DATA

Testing by SGS U.S. Testing Company Inc. according to method ASTM D 3273 demonstrates that Dens-Shield tile backer effectively impedes mold growth, scoring no mold growth with a best achievable rating of 10.

When tested in conformance with ASTM D 3273, Dens-Shield resisted the growth of mold and mildew. When tested in conformance with ASTM E 96, Dens-Shield achieved a perm rating of less than 1.5 alone, 1.0 with dry set mortars, and .5 when applied with a Type 1 tile mastic.

Dens-Shield has passed the ICBO required percolation test permitting application without a separate water barrier.

In an independently witnessed shower installation test, Dens-Shield was subjected to a shower of water at 110°F for 15 minutes per

hour for a one-year period—the equivalent of 28 years of showers—in an installation with no grout. No deterioration of the tiled wall and framing members due to water infiltration occurred.

5/8" Dens-Shield Fireguard® tile backer is fire rated for both 1-hour and 2-hour wall assemblies.

5/8" Dens-Shield Fireguard meets ASTM criteria for Type X (Type X fire resistant); therefore it can be substituted for Type X gypsum board specified in generic rated wall assemblies listed in the Gypsum Association Fire Reference Design Manual, Publication GA-600.

Dens-Shield Fireguard tile backer is UL Classified, Type DS, in UL Design Nos. U301, U302, U305, U309, U337, U342, U354, U355, U411, U425, U465, V417 and V419.

Dens-Shield has passed the TCA Robinson Floor Test in both 1/4" and 1/2" thicknesses with a rating of light commercial.

### INSTALLATION

#### TILE APPLICATIONS

WALLS AND CEILINGS IN BATHTUB AND SHOWER:

1. 2" 10 x 10 woven glass mesh tape should be applied over all joints and angles. Tape should be embedded in setting material used to set tiles. For best results, joints should be allowed to dry before tile is applied.
2. Tile must be applied to the coated (gray) side of Dens-Shield panels. All openings must be caulked with 100% silicone sealant/caulk or filled with tile-setting mastic or mortar or with self-sealing devices.
3. The following products should be used to set tile: Type 1 ceramic tile mastic, dry-set or latex portland cement mortar, epoxy mortars or other products recommended by the adhesive or mortar manufacturer.

SHOWER PAN:

1. When installing Dens-Shield on walls IN A SHOWER PAN APPLICATION, leave a 1/4" gap above mortar bed and apply flexible sealant. Do not install Dens-Shield in the shower pan.
2. Showers with curbs: Waterproof membrane should be applied up walls a minimum of 2" and a maximum of 4" above curb.
3. Showers without curbs: Waterproof membrane should be applied up walls a minimum of 6" and a maximum of 8".
4. Wood or other satisfactory blocking should be applied at the bottom framing

#### SUBMITTAL APPROVALS: (Stamps or Signatures)

- 1/4"—6.4mm
- 1/2"—12.7mm
- 5/8"—15.9mm, type X



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We make the things that make you feel at home.

to support the vertical sides of the shower pan or membrane and Dens-Shield®.

#### BATHTUB OR SHOWER RECEPTOR:

1. Dens-Shield panels can be applied horizontally or vertically.
2. The space between tile and tub and shower pan shall be completely filled with a flexible sealant to prevent water penetration.

#### FLOORS (UNDERLAYMENT):

1. Dens-Shield panels must be laminated coated side up to sub-floor using a latex portland cement mortar (ANSI 118.4) applied with 1/4" square-tooth notched trowel.
2. The sub-floor of APA-rated plywood floor panels must have a thickness of at least 5/8" for plywood and 3/4" for OSB. Subfloor should be applied over joists spaced 16" o.c. maximum with a L/360 deflection limitation for the span, including live and dead loads.
3. Engineered joists spaced 19.2" o.c. or 24" o.c. can be used when Georgia-Pacific Tough-Ply™ Sturd-I-Floor® 5/8" plywood is used. Floor system must be engineered to L/720 deflection for tiled floors.
4. Dens-Shield must be embedded into leveling bed while bed is still pliant (not exceeding open time).
5. Dens-Shield joints must be staggered over sub-floor joints at least 16" and panels fastened to sub-floor with 1 1/2" galvanized roofing nails or corrosion-resistant screws.
6. Fasteners must be spaced no greater than 8" o.c. in both directions. Fasteners shall be driven flush with the surface—no countersinking.
7. 2" x 10 glass mesh tape must be applied over joints, embedded with latex portland cement mortar.
8. Flooring grade tile 2" x 2" or larger must be applied with latex portland cement mortar (ANSI A118.4). Full thickness thresholds must be used and butted against the Dens-Shield panels and flush with the tile surface.
9. Latex portland cement floor grout (ANSI per A118.6) must be used.

#### COUNTERTOPS:

1. Base plywood must be installed flat and level, with framing spacing not exceeding 24" o.c. 1/2" exterior grade plywood shall be installed on top of supports, with cantilevered counters supported on

overhangs to prevent movement.

2. A leveling bed of latex portland cement mortar must be applied to plywood using 1/4" notch trowel.
3. While leveling bed is still fluid, Dens-Shield must be laminated to base gray side up and fastened every 6" to 8" o.c. in both length and width directions with 1 1/4" galvanized roofing nails or 1 1/4" Type W rust resistant drywall screws.
4. Joints of Dens-Shield panels must be staggered with those of the plywood base. Joints must abut tightly, with all joints and corners taped using a 2" wide self-adhering fiberglass mesh tape. Tape shall be embedded with latex portland cement mortar (ANSI A118.4).

#### FACING TILE OR SIMILAR MATERIAL:

1. Tile, expansion and control joints and grout must be installed in accordance with ANSI A108.

#### **NON-TILE APPLICATIONS—SIDEWALLS AND CEILING**

##### SUBSTRATE FOR PAINT AND WALL COVERINGS, DRY AREAS:

1. For sidewalls and ceilings, a 2" 10x10 glass mesh tape, applied over joints and angles, shall be embedded in Georgia-Pacific setting compound. A skim coat of setting compound shall be troweled over the entire Dens-Shield panel to produce a smooth surface. Prior to painting or papering, the surface shall be primed with a primer suitable for high-moisture areas, as recommended by the paint or wallpaper manufacturer for applications over setting compound.

##### HIGH HUMIDITY NON-TILE AREAS:

1. 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 Dens-Shield with materials that are highly water-resistant and form a vapor barrier in conjunction with Dens-Shield of less than 0.5 perms. See Sto Industries, Inc. Specification No. F-477, Dryvit's Interior Specification DS-174, Parex ParFlex®, Synergy Xtra-Stop® base coat 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:

1. In non-tile areas exposed to water or water condensation for prolonged periods, such as gang showers, processing plants, etc., apply a 6" wide strip of Sto Reinforcing Fiber Mesh or equivalent to angles and embed with Sto Flexyl® Ground Coat or equivalent.
2. Skim coat the entire surface with Flexyl to achieve a smooth and uniform surface. Prime with Sto Primer.
3. Apply two coats of Duron® Dura Clad® two-part water reducible epoxy paint at the rate of about 300 square feet per gallon for each coat.
4. In all steps, apply finishing materials according to manufacturers' instructions.

Product*:	Supplier:
Specification DS-174	Dryvit Systems 1-800-556-7752
Sto Flexyl® Sto Primer	Sto Industries 1-800-221-2397
ParFlex®	Parex 1-800-226-2424
Xtra-Stop® Base Coat	Synergy 1-800-221-9255
Dura Clad® Epoxy Paint, water reducible	Duron Paints and Wallcoverings 1-800-723-8766

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

NOTE: Installation recommendations by other manufacturers utilizing Dens-Shield as a component must comply with the installation instructions contained in this submittal sheet. Georgia-Pacific is not responsible or liable for Dens-Shield applications not installed according to these instructions.

### PRODUCT DATA

Thicknesses: 1/4"—6.4mm, 1/2"—12.7mm  
5/8"—15.9mm Type X

Width and Length: 4' x 4' (1/4"); 32" x 5' (1/2");  
4' x 5' and 4' x 8' (1/2"),  
4' x 8' (5/8")

Edges: Square

Conforms to ASTM C 1178 Glass Mat  
Water-Resistant Gypsum Backing Panel.

**Technical Information**  
U.S.A. and Canada: 1-800-225-6119  
Mon.-Fri., 8 a.m.-6 p.m. (ET)  
[www.gp.com/gypsum](http://www.gp.com/gypsum)

**TCA**   
Tile Council of America, Inc.

#### Sales Information and Order Placement

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

**CANADA**  
**Canada Toll Free:** 1-800-387-6823  
**Quebec Toll Free:** 1-800-361-0486  
**Canada Toll Free Fax:** 1-800-387-8975

Visit our Web site at [www.gp.com/gypsum](http://www.gp.com/gypsum).

