Code Compliance Research Report
CCRR-0334

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DIVISION: 09 00 00 – FINISHES
Section: 09 29 00 – Gypsum Board

REPORT HOLDER:
Georgia-Pacific Gypsum LLC
2861 Miller Road
Decatur, Georgia 30035
(770) 987-5190
www.gp.com

REPORT SUBJECT:
DensShield® FireGuard® Tile Backer and DensShield® Tile Backer

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2024, 2021, 2018 *International Building Code®* (IBC)
- 2024, 2021, 2018 *International Residential Code®* (IRC)

1.2 DensShield® FireGuard Tile Backer and DensShield® Tile Backer have been evaluated for the following properties:

- Physical properties
- Fire resistance

1.3 DensShield® FireGuard Tile Backer and DensShield® Tile Backer have been evaluated for the following uses:

- Base for wall tile in tub and shower areas and in other interior locations as described in IBC Section 2509.2 and IRC Section R702.4.2.
- Base for tiles applied to floors.
- Fire-resistance-rated assemblies as described in Section 5.5.

2.0 STATEMENT OF COMPLIANCE

DensShield® FireGuard Tile Backer and DenShield® Tile Backer complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

2.1 2024 IBC and IRC Evaluation Reports

The Intertek CCRR is an Evaluation Report for approval of an alternate material, design, or method of construction in accordance with Section 104.2.3.6.1 of the 2024 IBC and Section R104.2.2.6.1 of the 2024 IRC.

3.0 DESCRIPTION

3.1 General:

DensShield® Tile Backer and DensShield® FireGuard Tile Backer are glass-mat gypsum boards complying with ASTM C1178. DensShield® Tile Backer in 1/2- and nominal 1/4-inch thicknesses are glass-mat gypsum boards tested to ASTM C627 for residential and light commercial tile floor applications as bases for ceramic tiles. The boards have a water-resistant gypsum core with a glass-fiber mat embedded beneath the surface and one face covered with a grey acrylic coating.

3.2 DensShield® Tile Backer:

The nominal 1/4-inch-thick panels are 48 inches wide by 48 inches long. The board weight is 1.6 pounds per square foot.

The 1/2-inch-thick panels are 32 inches wide by 60 inches long, 48 inches wide by 60 inches long, and 48 inches wide by 96 inches long. The board weight is 2.0 pounds per square foot.

3.3 DensShield® FireGuard Tile Backer:

The 5/8-inch-thick panels are 48 inches wide by 96 inches long. The board weight is 2.5 pounds per square foot.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Flame Spread Characteristics: The DensShield panels have a flame spread index of 25 or less and a smoke

developed index of 450 or less when tested in accordance with ASTM E84.

5.0 INSTALLATION

5.1 General:

DensShield® Tile Backer and DensShield® FireGuard Tile Backer must be installed in accordance with this report, the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available on the jobsite at all times during construction. The boards must be installed with the grey acrylic coating side facing away from the framing.

On walls, the panels must be installed in accordance with GA 216 or ASTM C840 in accordance with IBC Section 2509.2 or IRC Section R702.4.2. All joints between panels, in areas intended to receive ceramic tile, must be treated with 2-inch-wide, 10 by 10, alkaline-resistant fiberglass mesh tape embedded in a skim coat of a latex-modified mortar complying with ANSI A118.4. All joints between the tile backer and other substrates, not intended to receive ceramic tile, must be treated in accordance with the manufacturer's published installation instructions.

The DensShield® panels must not be installed where the temperature may exceed 125°F, and must be installed when the ambient temperature at the time of installation is between 50°F and 95°F.

5.2 Wall Framing:

When 1/2-inch thick DensShield® is used as a substrate for tile, minimum 2 by 4 wood or No. 20 gage steel framing must be spaced no greater than 16 inches on-center. Framing spacing is permitted to be 24 inches on-center when blocking is used to support panel joints for 1/2-inch panels, or when 5/8-inch-thick panels are used. The backer board may be applied vertically or horizontally, except as noted in Section 5.6.

5.3 Ceiling Framing:

Ceiling framing must not exceed 12 inches on-center for 1/2-inch-thick panels, or 16 inches on-center for 5/8-inch-thick panels. The panels must be applied perpendicular to the framing.

5.4 Floors:

When used in floor applications, the DensShield® Tile Backer must be installed over a structural floor system. Floor tiles must be minimum 2-inch by 2-inch ceramic tiles.

5.5 Fasteners:

Fasteners used to install DensShield® panels must comply with ASTM C1002 and must be selected in accordance with Table 2 for each given application, or as described in Section 5.6. Fasteners must be driven flush with the panel surface and must not be counter-sunk.

5.6 Fire-resistance-rated Wall Assemblies:

5.6.1 One-hour Nonload-bearing Walls: The assembly consists of minimum 2-1/2-inch, No. 25 gage metal C-studs spaced at a maximum of 16 inches on-center and friction-fitted into a 2-1/2-inch U-track. The stud spaces must be filled with 3-1/2-inch-thick, R-11, unfaced fiberglass insulation. Both sides of the assembly must be covered with 1/2-inch-thick DensShield® Tile Backer and fastened with 1-inch Type S screws at 8 inches on-center at edges and 12 inches on-center in the field. The boards must be installed with the long dimensions parallel to the studs, with panel joints offset 16 inches minimum. Exposed wallboard joints must be treated with paper tape embedded in joint compound, which then must be covered with two coats of joint compound in accordance with ASTM C840 and GA-216. Screw heads must be covered with two coats of joint compound.

5.6.2 Two-hour Nonload-bearing Walls: The assembly consists of minimum 2-1/2-inch, No. 25 gage metal C-studs spaced a maximum of 24 inches on-center and friction-fitted into a 2-1/2-inch U-track. The base layer is Georgia-Pacific 1/2-inch Fireguard C™, fastened to framing on each side of the assembly with 1-inch Type S screws at 24 inches on-center. The face layer is 1/2-inch DensShield® Tile Backer, fastened with 1-5/8-inch Type S screws at 8 inches on-center at edges and 12 inches on-center in the field. The boards must be installed with the long dimension parallel to the studs, and with joints staggered. Exposed wallboard joints must be treated with paper tape embedded in joint compound, which then must be covered with two coats of joint compound in accordance with ASTM C840 and GA-216. Screw heads must be covered with two coats of joint compound.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

6.2 Use of DensShield® Tile Backer is limited to interior applications.

6.3 Joint compound or paper tape must not be used with DensShield® Tile Backer boards in wet areas.

6.4 The nominal 1/4-inch DensShield® Tile Backer boards must be installed over solid surfaces.

6.5 The panels must not be used as a nailing base. Fastening must be made directly to the framing.

7.0 SUPPORTING EVIDENCE

7.1 Manufacturer's descriptive literature and installation instructions.

7.2 Reports of tests in accordance with ASTM C473, ASTM C627, ASTM C1178 and ASTM E119.

7.3 Quality documentation.

8.0 IDENTIFICATION

The DensShield® Tile Backer and the DensShield® FireGuard Tile Backer are identified by a label bearing the manufacturer's name (Georgia-Pacific Gypsum LLC), the product name, the manufacturing plant identifier, a date code and the evaluation report number (CCRR-0334).

9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

TABLE 1 – PROPERTIES EVALUATED

Property	2024 IBC	2024 IRC
Physical properties	2509.2	R702.4.2
Surface-burning characteristics	803.1	R302.9
Fire resistance	703.3	NA

TABLE 2 – FASTENING GUIDE

APPLICATION	FASTENER	MINIMUM LENGTH[1] (inches)		ON CENTER SPACING (inches)
		1/2-inch Panels	5/8-inch Panels	
Walls and ceilings (wood frame)	Galvanized[2] roofing nails	1-1/2	1-3/4	6 (along framing)
	Corrosion-resistant[2], Type W, self-piercing tapping, drywall screws[4]	1-1/4	1-5/8	
Walls and ceilings (metal frame)	Corrosion-resistant[2], Type S[5], self-piercing tapping, drywall screws[4]	1-1/4		
Floors	Galvanized[2] roofing nails	1-1/4		8 (both directions)
	Corrosion-resistant[2], Type S, self-piercing tapping, drywall screws[4]	1-1/4		
Floors	1/4-inch crown, corrosion-resistant[2], chisel-point staples[3]	Nom. 1/4-inch panels		2 (edges) 4 (field)
		7/8		

[1] Fasteners must penetrate at least 3/4 inch.
[2] Contact fastener manufacturer for proper selection of corrosion resistance.
[3] Applicable to nominally 1/4-inch panels only.
[4] Screws must conform to ASTM C1002 specifications.
[5] Type S-12 screws must be used with steel framing with thickness greater than No. 20 gage.