

HardieBacker®

Cement Board *with*

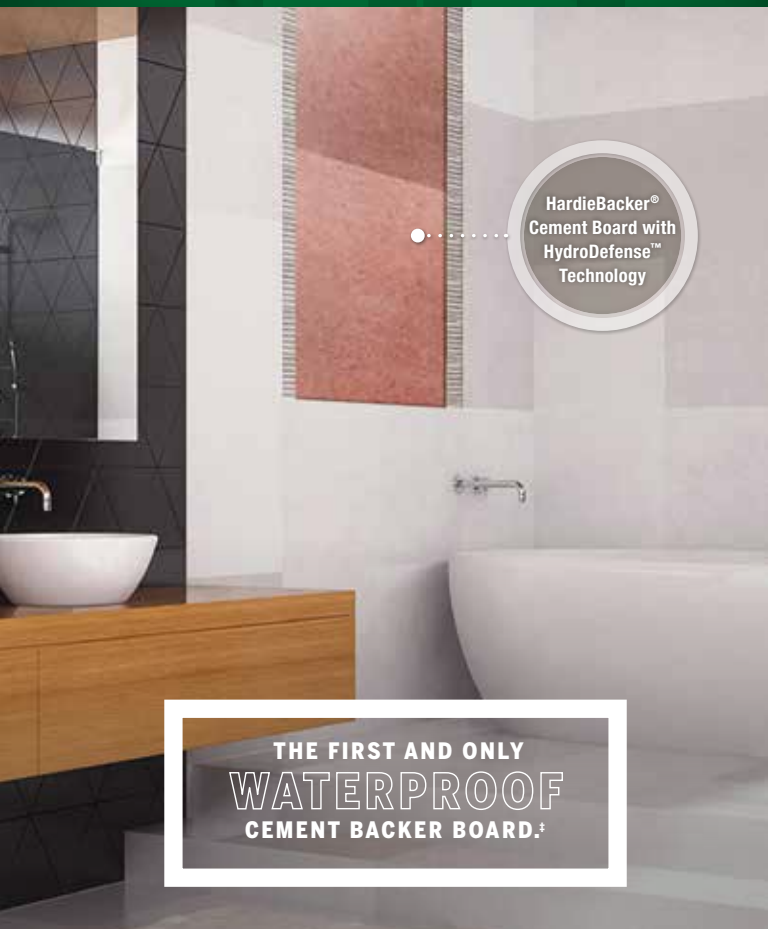
HydroDefense™

Technology

Cut time. Not Quality.

Installation Guide

FOR **WALLS, FLOORS AND COUNTERTOPS**



HardieBacker®
Cement Board with
HydroDefense™
Technology

THE FIRST AND ONLY
WATERPROOF
CEMENT BACKER BOARD.‡

 **JamesHardie™**
Underlayment

‡Passes ANSI A118.10 Waterproofness Test.

SPECIFICATIONS

- Thickness: 0.42 in.
- Dimensions: 36 in. x 60 in.
- Weight: 2.6 lb/sq. ft.
- Application: Walls, floors & countertops

CUTTING HARDIEBACKER® CEMENT BOARD WITH HYDRODEFENSE™ TECHNOLOGY

- Use a straight edge as a guide to score the board's face and snap upward along the score line. We recommend using a carbide tipped scoring knife, but a utility knife may also be used. The use of shears (manual, electric or pneumatic) is also acceptable.
- For cutouts and small holes, score around perimeter and break out from the face side with hammer.
- Using high-speed power tools (e.g. saws, grinders, etc.) to cut James Hardie® products may generate excessive silica dust.

NEVER cut James Hardie products indoors with these tools.

ALWAYS cut outside with adequate ventilation and/or dust collection equipment in accordance with OSHA regulations.

To further limit respirable silica dust exposures, wear a properly-fitted NIOSH approved dust mask or respirator (e.g. N-95 dust mask) in accordance with applicable government regulations and manufacturer instructions.

- NEVER dry sweep – Use wet dust suppression methods, sweeping compound, or use a vacuum to collect dust.



WALL INSTALLATION

1 | Ensure the framing is structurally sound

- Framing shall comply with local building codes and ANSI A108.11.
- Use a minimum of 2 in. x 4 in. wood studs or 20-gauge metal studs, which must be straight, properly aligned and spaced a maximum of 16 in. on center.
- In tub and shower enclosures, ensure that the framing is adequately reinforced at the corners and ends.

WALL INSTALLATION (Continued)

2 | Determine the HardieBacker® Cement Board with HydroDefense™ Technology layout

- Boards may be installed vertically or horizontally.
- Edges of the board parallel to framing must be supported by a structural framing member.
- Score and snap boards to required sizes and make necessary cutouts.

3 | Attach the HardieBacker® Cement Board with HydroDefense™ Technology to framing

- HardieBacker® Cement Board with HydroDefense™ Technology has internal waterproofing treatments. Does not require a moisture barrier.*
- Attach the HardieBacker® Cement Board with HydroDefense™ Technology.
- Provide a 1/4 in. clearance gap between the floor, tub or shower receptor base and the cement board.
- Do not place cement board into the shower pan mortar bed.
- Fasten the product with specified nails or screws (as listed in “Materials Required”) a maximum of 8 in. on center at all supports.
- Keep fasteners 3/8 in. from board edges and 2 in. in from sheet corners.
- Set fastener heads flush with the surface, without overdriving.

4 | Joints and Penetrations

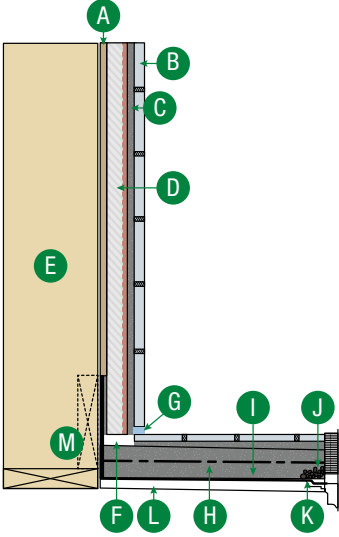
- Seal fixture penetrations, plumbing penetrations and abutments to dissimilar materials with flexible sealant (see “Materials Required”).
- Fill all joints with mortar (see “Materials Required”). While mortar is still workable, embed minimum 2 in. wide high-strength alkali-resistant glass fiber tape in the mortar and level.
- Do not use all-purpose joint compound or paper tape.
- When complete waterproofing is required, seal all joints, edges and fastener penetrations with a liquid waterproofing membrane. Follow the liquid waterproofing membrane manufacturer application instructions.

*Some application areas may require additional waterproofing. Refer to local building code requirements.



SITE BUILT SHOWER RECEPTOR

Apply shower liner in accordance with applicable codes ([2015/18 IRC P2709](#), [2015 IPC 417.5](#) and/or [2018 IPC 421.5](#)). Completed liners shall be flood tested in accordance with code.

- 
- A** Shim (if needed)
 - B** Tiles
 - C** Mortar
 - D** HardieBacker® Cement Board with HydroDefense™ Technology
 - E** Wood or minimum 20 gauge (33 mil) metal studs
 - F** 1/4 inch clearance gap¹
 - G** Sealant
 - H** Reinforced mortar bed
 - I** Shower liner²
 - J** Weep holes
 - K** Pea gravel or other weep hole protection
 - L** Sloped fill under shower liner³
 - M** Wood blocking or other continuous blocking⁴

¹IMPORTANT: Do not place the cement board into the shower pan mortar bed.

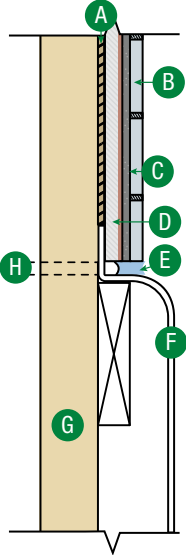
²Per code: The shower liner shall turn up on all walls a minimum of 2 in. above finished threshold level.

³Per code: The shower pan liner shall be adequately sloped towards the drain typically 2% slope or ¼ in. vertical per 1 ft. horizontal.

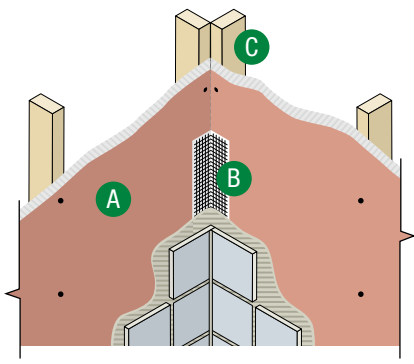
⁴Per code: Support the vertical sides of the shower liner by fastening it to wood blocking or other continuous blocking applied at the bottom of the framing. The shower liner shall not be nailed or perforated at any point lower than 1 in. above the finished threshold).

NOTE: Always check with your local code jurisdiction for appropriate requirements on your project.

PREFABRICATED SHOWER RECEPTOR OR BATHTUB

- 
- A** Shim (if needed)
 - B** Tiles
 - C** Mortar
 - D** HardieBacker® Cement Board with HydroDefense™ Technology
 - E** Sealant
 - F** Bathtub or prefabricated shower receptor
 - G** Wood or minimum 20 gauge (33 mil) metal studs
 - H** ¼ inch clearance gap

CORNER



A HardieBacker® Cement Board with HydroDefense™ Technology

C Wood or min. 20-gauge (33 mils) steel studs

B Mortar embedded in fiberglass mesh tape

WOOD FLOOR INSTALLATION *(Interior application)*

1 | Ensure the subfloor is structurally sound

On existing structures:

- Ensure subfloor is not damaged. Replace any loose, warped, uneven or damaged sections of floor.
- Make certain subfloor is a clean and flat surface.

For all floors:

- Use minimum 5/8 exterior grade plywood or 23/32 OSB with Exposure 1 classification or better, complying with local building codes and ANSI A108.11.
- Joist spacing not to exceed 24 in on center.
- The floor assembly must be engineered not to exceed the L/360 deflection criteria (L/720 for natural stone), including live and dead design loads, for the specific joist spacing used.
- Expansion/Control joints shall be installed per TCNA installation method EJ171. Obtain professional advice (architect, builder or other design professional) for joint specifications and locations.

2 | Determine the backerboard layout

- Stagger all HardieBacker® Cement Board with HydroDefense™ Technology joints. Do not align with subfloor joints.
- Never allow all four corners of four boards to meet at one point.
- We recommend a 1/8 in. gap between board edges.
- Keep sheet edges 1/8 in. back from walls and cabinet bases.
- Measure, score and snap boards to required sizes and make necessary cutouts.



WOOD FLOOR INSTALLATION (Continued)

3 | Attach the HardieBacker® Cement Board with HydroDefense™ Technology to the subfloor

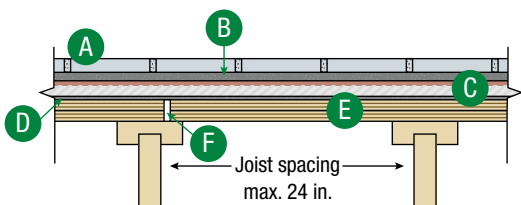
- HardieBacker® Cement Board with HydroDefense™ Technology has internal waterproofing treatment. Does not require a moisture barrier.*
- Apply a supporting bed of dry-set mortar or modified dry-set mortar to subfloor using a 1/4 in. square-notched trowel.
- Install HardieBacker® Cement Board with HydroDefense™ Technology.
- Embed cement board firmly and evenly in the wet mortar (see “Materials Required”).
- Fasten cement board with specified nails or screws (see “Materials Required”) a maximum of 8 in. on center over the entire surface.
- Keep fasteners 3/8 in. to 3/4 in. from board edges and 2 in. in from sheet corners.
- Set fastener heads flush with the surface, without overdriving.

4 | Joints and penetrations

- Seal fixture penetrations, plumbing penetrations and abutments to dissimilar materials with flexible sealant (see “Materials Required”).
- Fill all joints with mortar (see “Materials Required”) while mortar is still workable embed 2 in. wide high-strength alkali-resistant glass fiber tape in the mortar and level.
- Do not use all-purpose joint compound or paper tape.
- When complete waterproofing is required, seal all joints, edges and fastener penetrations with a liquid waterproofing membrane. Follow the liquid waterproofing membrane manufacturer application instructions.

WOOD FLOOR DETAIL

The floor assembly (floor joists and subfloor) must be engineered not to exceed the L/360 deflection criteria (L/720 for natural stone), including live and dead design loads, for the specific joist spacing used.



- | | |
|---|-------------------------|
| A Tiles | D Bedding Mortar |
| B Tile bonding mortar | E Wood Subfloor |
| C HardieBacker® Cement Board with HydroDefense™ Technology | F Gap |

*Some application areas may require additional waterproofing. Refer to local building code requirements.

COUNTERTOP INSTALLATION

1 | Ensure the cabinets are level and secure

- Use minimum 1/2 in. thick exterior grade plywood subbase or equivalent, positioned across the wood cabinet. Space between plywood supports is not to exceed 16 in. on center.

2 | Determine the HardieBacker® Cement Board with HydroDefense™ Technology layout

- Do not align cement board joints with plywood joints.
- Score and snap boards to required sizes and make necessary cutouts.
- We recommend an 1/8 in. gap from board edges and joints.

3 | Attach the HardieBacker® Cement Board with HydroDefense™ Technology to the countertop

- HardieBacker® Cement Board with HydroDefense™ Technology has internal waterproofing treatment. Does not require a moisture barrier*
- Apply a supporting bed of dry-set mortar or modified dry-set mortar to plywood with a 1/4 in. square-notched trowel.
- Install HardieBacker® Cement Board with HydroDefense™ Technology.
- Embed cement board firmly and evenly in the wet mortar.
- Fasten cement board with specified nails or screws (see “Materials Required”) a maximum of 8 in. on center over the entire surface.
- Keep fasteners 3/8 in. and 3/4 in. from board edges and 2 in. in from sheet corners.
- Set fastener heads flush with the surface, without overdriving.

4 | Joints and penetrations

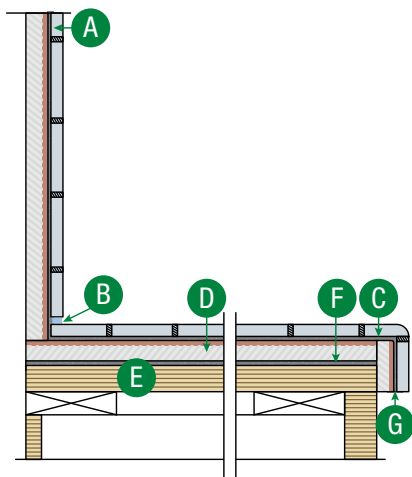
- Seal fixture penetrations, plumbing penetrations and abutments to dissimilar materials with flexible sealant (see “Materials Required”).
- Prior to setting the tile, fill all joints with the same mortar used to set the tiles (see “Materials Required”). While mortar is still workable, embed 2 in. wide high-strength alkali-resistant glass fiber tape in the mortar and level.
- Do not use all-purpose joint compound or paper tape.
- When complete waterproofing is required, seal all joints, edges and fastener penetrations with a liquid waterproofing membrane. Follow the liquid waterproofing membrane manufacturer application instructions.

5 | Exterior Countertop application (limited to HardieBacker® Cement Board with HydroDefense™ Technology in HZ10 climate zones[‡] - additional details on page 6)

- Follow countertop installation steps 1 through 4.
- DO NOT use mastic (organic adhesives) in exterior applications.

*Some application areas may require additional waterproofing. Refer to local building code requirements.

COUNTERTOP DETAIL



- | | |
|---|--------------------------|
| A Tiles | E Wood subbase |
| B Sealant | F Bedding mortar |
| C Tile bonding mortar | G Fiberglass tape |
| D HardieBacker® Cement Board with HydroDefense™ Technology | |

FINISHING WITH A TILE

1. Refer to ANSI A108 and the mortar and tile manufacturers' published application guidelines for complete tiling instructions.
2. Wipe the surface of HardieBacker® Cement Board with HydroDefense™ Technology clean with a damp sponge just prior to adding mastic or mortar.
3. Spread the mastic or mortar with a notched trowel (Note: Please see "Materials Required" to see which setting material is required for your application).
4. Twist or press and beat in tiles (ceramic tile shall comply with ANSI A137.1).
5. Allow a minimum of 24 hours curing set time before grouting.

FINISHING WITH NATURAL STONE

Natural stone often has hidden weaknesses which can result in surface cracks in finished floors. For best results, always follow the Natural Stone Institute recommendations (www.naturalstoneinstitute.org).

In addition to the steps outlined under "Wood Floor Installation," the following is required:

- The floor must be engineered not to exceed the L/720 deflection criteria, including live and dead design loads, for the specific joist spacing used.
- The strength of your natural stone will have an impact on the ultimate performance of your flooring system. Marble and natural stones must have sufficient flexural strength for use in flooring systems. James Hardie recommends using marble or natural stone with a flexural strength of at least 2900 PSI.

FINISHING WITH PAINT, WALLPAPER OR TEXTURE (Interior application only)

1 | Painting or Wallpapering

Apply a drywall primer suitable for high-moisture areas, as recommended by the paint manufacturer. Paint HardieBacker® Cement Board with HydroDefense™ Technology as you would drywall. If wallpapering, prime surface of the cement board with a primer suitable for high-moisture areas as recommended by the wallpaper manufacturer.

2 | Texturing

Texture can be applied to HardieBacker® Cement Board with HydroDefense™ Technology in the same way as drywall. Follow texture coating manufacturer's application instructions.

STEAM ROOM APPLICATION

HardieBacker® Cement Board with HydroDefense™ Technology is recognized for use in residential steam rooms when installed over conventional framing and in accordance with HardieBacker® Cement Board installation instructions, TCNA guidelines (Tile Council of North America Handbook, www.tileusa.com), and local building codes. Questions and concerns regarding steam room design and construction should be directed to a knowledgeable professional.

EXTERIOR APPLICATION

Exterior applications are limited to HZ10 product zones. See page 11 for additional information.

HardieBacker® Cement Board with HydroDefense™ Technology may be used up to a height not exceeding the lesser of: through the second-story above grade or 30 ft. above grade. The product must be installed over sub-sheathing with a code approved water-resistive barrier, or in accordance with the applicable code. Install flashings, clearances, and other building practices per local code. James Hardie will assume no responsibility for water infiltration. Fasteners: Use a minimum No.11 ga. 1-3/4 in. long roofing nails or No. 8 1-3/4 in. long 0.375 in HD or ribbed wafer head corrosion resistant screws spaced a maximum of 8 in. OC into supports.

The maximum weight of the overlayment (tiles, stones and veneers) is not to exceed the code limit of 15 lbs/sq ft. Follow installation procedure in accordance with the stone and mortar manufacturer's recommendations. Stones must be free of any substance that may impede proper adhesion. Skim coat is recommended to be 1/8 in. – 1/4 in. thick and the tile/stone is to be installed while the skim coat is wet.

CAUTIONS: Do not use HardieBacker® Cement Board with HydroDefense™ Technology in any of the following applications:

- As a backer board in balcony railings and balcony parapet walls.
- Installed to a height exceeding through the second story above grade or greater than 30 ft. above grade.



BASIC COMPOSITION

90% Portland cement and sand with selected additives. Contains no asbestos, formaldehyde, gypsum, paper facing, or abrasive aggregate.

HardieBacker® Cement Board with HydroDefense™ Technology:

Sheet sizes: 3 ft. x 5 ft.

Thickness: 0.42 in.

Weight: 2.6 lb / sq. ft. (12.7 kg/m²)

MATERIALS REQUIRED

1 | Mortar

For floors:

- Tile Bonding Mortar – Modified Dry-set Cement Mortar complying with ANSI A118.4.
- Bedding Mortar (for use as a supporting bed of mortar between the subfloor and cement board only) – Dry-set Cement Mortar complying with ANSI A118.1 or Modified Dry-set Cement Mortar complying with ANSI A118.4.

For countertops:

- Tile Bonding Mortar – Modified Dry-set Cement Mortar complying with ANSI A118.4.
- Bedding Mortar (for use as a supporting bed of mortar between the subbase and cement board only) – Dry-set Cement Mortar complying with ANSI A118.1 or Modified Dry-set Cement Mortar complying with ANSI A118.4.
- For Exterior applications, follow stone and mortar manufacturer's recommendations.

For walls:

- Tile Bonding Mortar – Modified Dry-set Cement Mortar complying with ANSI A118.4.
- Tile Bonding Adhesive – Type 1 Organic Adhesive (mastic) complying with ANSI A136.1 (Not to be used in exterior applications or interior wet areas).
- For Exterior applications, follow stone and mortar manufacturer's recommendations.

2 | Tape

- Minimum 2 in. wide high-strength alkali-resistant glass fiber tape.

3 | Sealant

- Flexible mildew resistant 100% silicone sealant complying with ASTM C920 (for stone - check with stone supplier for compatible sealant recommendations).

4 | Fasteners

Finish	Framing	Fastener	Fastener Spacing
Tile Finish	Interior Wall: Wood Framing	Minimum 1-1/4 in. long corrosion-resistant roofing nails ¹	8 in. on center along all supports
		Minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws ²	
	Exterior Wall: Wood Framing	Minimum 1-3/4 in. long corrosion-resistant roofing nails	
		Minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws	
Paint or wall paper finish	Interior Wall: Wood framing	Minimum 1-3/8 in. long gypsum board nails	
		Minimum 1-1/4 in. long No. 8 by 0.323 in. head diameter, self-drilling, corrosion resistant, ribbed bugle head screws	
Tile Finish	Interior Wall: Steel framing	Minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws ³	
	Exterior Wall: Steel framing	Minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws	
Paint or Wall paper finish	Interior Wall: Steel framing	Minimum 1 in. long No. 8 by 0.323 in. head diameter, self-drilling, corrosion resistant, ribbed bugle head screws	
Tile Finish	Interior Floor: Wood subfloor	Minimum 1-1/4 in. long corrosion-resistant roofing nails	
		Minimum 1 in. long No. 8 by 0.323 in. head diameter, self-drilling, corrosion resistant, ribbed bugle head screws	
		For compliance to ANSI A108.11 use minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws	
Tile Finish	Interior/Exterior Countertop: Wood subbase	Minimum 1-1/4 in. long corrosion-resistant roofing nails	
		Minimum 1-1/4 in. long No. 8 by 0.375 in. head diameter, self-drilling, corrosion resistant, ribbed wafer head screws	
		Minimum 1-1/4 in. long No. 8 by 0.323 in. head diameter, self-drilling, corrosion resistant, ribbed bugle head screws	
		18 gauge corrosion resistant polymer coated 1 in. staples with 1/4 in. crown (change to 3/4 in. or 1 in. crown)	

¹For compliance to ANSI A108.11, nails into wood framing must be of sufficient length to penetrate at least 3/4 inch into wood members.

²For compliance to ANSI A108.11, screws into wood framing must be of sufficient length to provide at least 3/4 inch of thread engagement.

³For compliance to ANSI A108.11, screws into steel framing must be of sufficient length to penetrate the metal framing at least three full threads or 1/4 inch of thread engagement.

ENVIRONMENTAL CONSIDERATIONS

HardieBacker® Cement Board with HydroDefense™ Technology employs a proprietary cement formulation that provides a waterproof wallboard and tile backer substrate that stands tough over time, reducing the need for product replacement. James Hardie is committed to reducing energy consumption, while improving process efficiencies and waste management. The Company avoids the use of environmentally damaging materials and uses renewable resources in the manufacture of its products. HardieBacker® Cement Board with HydroDefense™ Technology does not contain any glass fibers, gypsum, asbestos or formaldehyde. James Hardie also focuses on water conservation and attempts to recycle water and waste product as much as possible during the manufacturing process.

RECOGNITIONS

HardieBacker® Cement Board with HydroDefense™ Technology is recognized as an interior substrate by complying with the following standards:

- ASTM C1288 Grade II
- ASTM C1325
- ANSI A118.9
- ANSI A118.10 Section 4.5
- UL Environment GREENGUARD Gold Certified – product certified for low chemical emission UL2818, complies with the State of California’s Department of Public Health Services Standard Practice for Specification Section 01350 (California Section 01350) for testing chemical emissions from building products used in schools and other environments.

Code References:

- IBC 2509.2
- IRC R702.4.2

Consult these documents for additional information concerning conditions for use in applicable jurisdictions. Cementitious Backer Unit/Fiber-Cement Underlayment Compressive Strength Compressive Strength at Equilibrium Moisture Content (ASTM D2394) HardieBacker® Cement Board with HydroDefense™ Technology: 6500 psi (45 MPa).

Non-Combustibility HardieBacker cement board is recognized as non-combustible in accordance with ASTM E136.

Surface Burning Characteristics When tested in accordance with ASTM method E-84: Flame Spread – 0, Fuel Contributed – 0, Smoke Developed – 5. Fire Rated Assemblies, HardieBacker cement board may be used as a component in one-hour fire-resistive wall construction; consult the [Intertek Directory of Building Products](#) or James Hardie’s Technical Services at 1-800-9HARDIE (1-800-942-7343) for recognized assemblies.



HARDIEBACKER WARRANTIES

INTERIOR APPLICATIONS

The HardieBacker® Cement Board with HydroDefense™ Technology comes with a limited lifetime warranty. Download a copy from www.hardiebacker.com or obtain one from wherever James Hardie products are sold.

EXTERIOR APPLICATIONS

James Hardie offers a limited 10 year warranty for HardieBacker® Cement Board with HydroDefense™ Technology installed in exterior applications in HardieZone HZ10 regions only. To find out the HardieZone designation for your ZIP code, go to www.HardieZone.com.

*Some application areas may require additional waterproofing. Refer to local building code requirements.