PermaBase® BRAND

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Cement Board Construction Guide

National Gypsum®

Helping You Build Better

With High-Quality Products And Resources

Founded in 1925, National Gypsum is one of the world's largest producers of quality building products. For nearly a century, customers like you have looked to us for the best products, service and technical support. With a focus on sustainability, we strive to bring you the finest in construction products, education and resources to meet and exceed your expectations.

With Technical Support You Can Count On

Great products are nothing without great customer service. For detailed technical information about product applications, installation requirements, code requirements or roof and wall assemblies, call 1-800-NATIONAL®. Talk directly to a technical expert with up-to-date knowledge of products, specifications, building codes and more. Our technical experts can even review your plans and drawings and get back to you with answers to your questions within 48 hours.

Working Wherever Your Project Takes You

Choose From Four Types Of PermaBase® BRAND Cement Board:

More Hard-Working Varieties With Qualities You Can Depend On

With four types of PermaBase® BRAND Cement Board to choose from, you'll find a match for most any project. This durable substrate withstands prolonged exposure to moisture in both interior and exterior applications. Lightweight and easy to install, PermaBase promises to deliver for the long run – with the industry's best warranties. It is also GREENGUARD Certified for low-chemical emissions, which can contribute to healthier indoor environments.

Saving You Time And Money

These exclusive PermaBase features translate to cost savings for you:

EdgeTech® Technology – This patented, reinforced edge allows fasteners to be installed closer to the board's edge and reduces damage from handling.

Polystyrene Beads – Embedded in the PermaBase core, these beads help to lighten the board's weight, improve the ease of cutting, and create lower water absorption, preventing the mortar/finish adhesive from drying prematurely.

Our PermaBase® Product Family

1 PermaBase® Cement Board

The original that set the industry standard.

2 PermaBase PLUS® Cement Board

Weighs 25% less than other cement boards on the market.

3 PermaBase UltraBacker® Cement Board

Provides excellent rigidity for special applications with the lowest water-absorption rate.

4 PermaBase Flex® Cement Board

Very flexible yet strong, and ideal for use around archways, columns, stairwells – wherever an evenly curved surface is required.

APPLICATIONS

Product	Floors	Countertops	Walls	Ceilings	Exteriors
1/4" PermaBase	●	●	○	○	○
1/4" UltraBacker	●	●	○	○	○
7/16" PermaBase PLUS	●	●	●	●	●
1/2" PermaBase	●	●	●	●	●
5/8" PermaBase	●	●	●	●	●
1/2" PermaBase FLEX	○	○	●	●	●

Recommended: ● Yes ○ No

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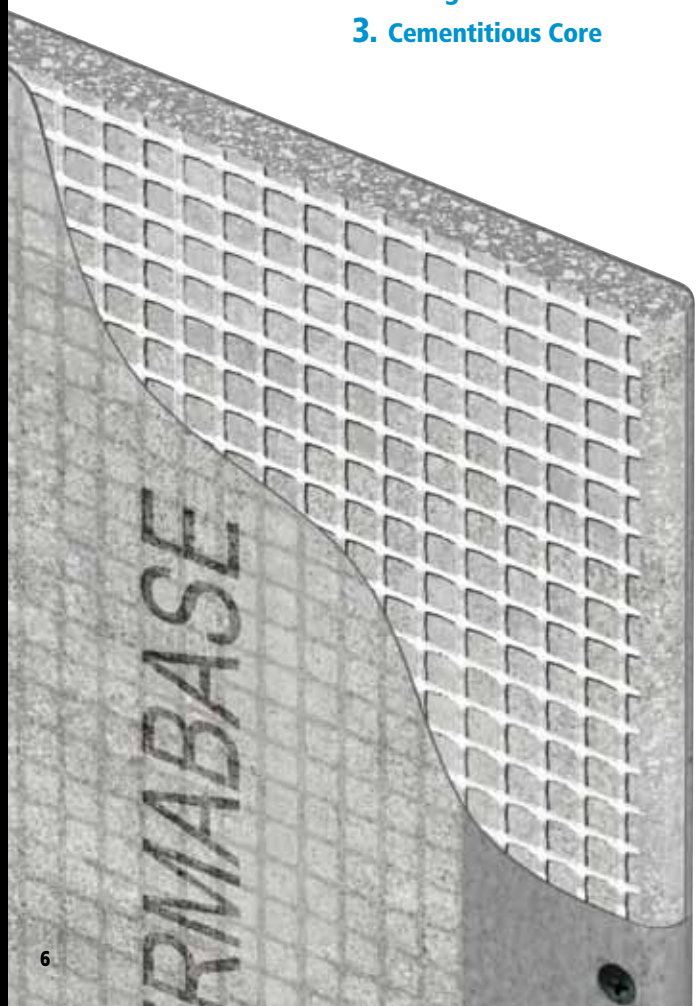
Building In Strength And Quality

Reinforce With The Best Rigid Substrate: PermaBase® BRAND Cement Board

PermaBase® provides a durable surface designed to withstand prolonged exposure to moisture. Made with Portland cement, aggregate and fiberglass mesh, it works well as an underlayment for tub and shower surrounds, countertops, flooring and a variety of other interior and exterior applications. Lightweight and easy to install, our patented EdgeTech® Technology allows a closer nail or screw application.

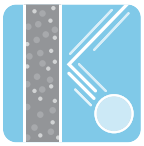
Quality To The Core

1. **Patented Reinforced Edge**
2. **Fiberglass Mesh**
3. **Cementitious Core**



Resists Moisture Better

- Stays intact when exposed to water: will not rot, disintegrate or swell – built for the long run
- Achieves the industry's lowest water-absorption rating (ASTM C 473) – offering better installation
- Helps inhibit mold growth with the highest possible score on mold tests (ASTM D 3273 and ASTM G 21)



Stays Strong And Lasts Long

- Resists impact and remains dimensionally stable – extending the life of your project
- Holds up to the toughest conditions

Installs Quickly

- Lightweight and easy to cut – speeding up installation
- Reduces jobsite waste – easier, cleaner cut
- Patented EdgeTech® Technology allows for a closer edge fastening and reduces damage from handling

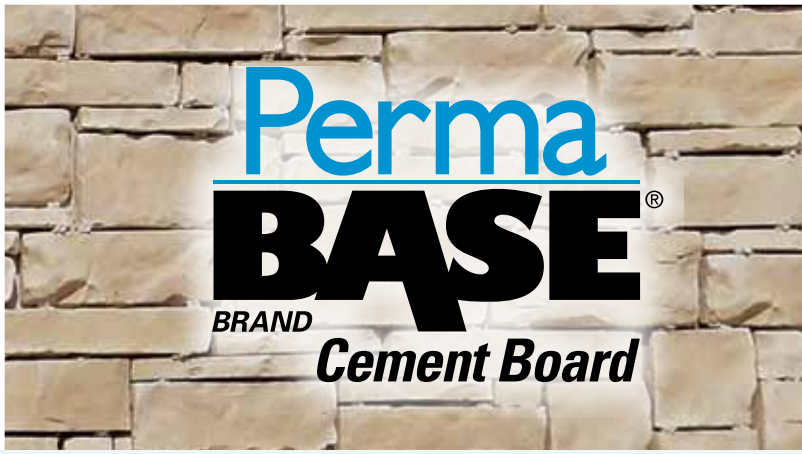
Works For Interior And Exterior Projects

– One Panel, Many Applications

- Adhere tile, stone or thin brick directly to PermaBase in exterior applications – saving time and money
- Durable substrate for direct-applied coating systems
- Meets UL classifications for one- and two-hour fire-rated assemblies
- Building code approved – one substrate that does the job of many

Offers Best In Class Warranty

- Lifetime Limited Warranty: Interior applications
- 15-Year Limited Warranty: Exterior applications



What Sets PermaBase® Apart From The Rest?

Physical Feature Benefits	PermaBase Cement Board	Other Cement Boards	Fiber Cement Boards
Low Weight Glass Mesh Cement Board	✓	○	○
Reinforced Edge	✓	○	○
Fastens Near Edge With No Breakout	✓	○	○
Highest Damage Resistancy From Handling	✓	○	○
Cleanest To Score And Snap	✓	○	○
Lowest Water Absorption	✓	○	○
Meets 40 psf Rating Wind Load Test Results (Stud spacing 16" o.c.)	✓	○	○
Cuts With Utility Knife Vs. Power Tools	✓	✓	○
Standard Fasteners Countersink Into Board	✓	✓	○
Can Be Used In Both Residential And Commercial Steam Rooms And Saunas	✓	✓	○
Inorganic Vs. Organic Core	✓	✓	○
Lifetime Limited Warranty For Interior Use	✓	✓	○
15-Year Warranty For Exterior Use	✓	○	○

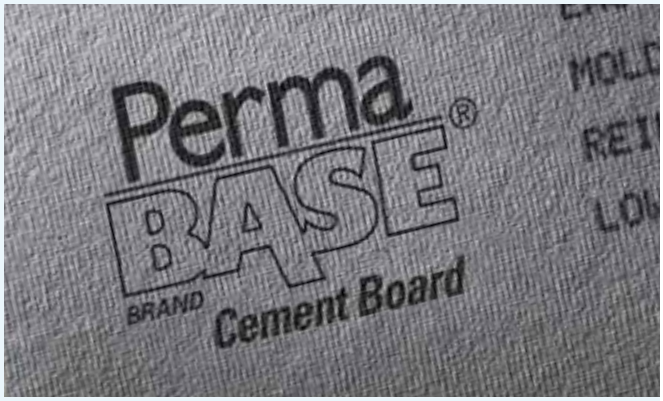
Product Feature: ✓ Yes ○ No

Expanding Your Project Horizon

Dream Up Your Designs – Interior And Exterior

Install Fast, Cut Costs And Improve Quality With PermaBase® BRAND Cement Board

- Stays strong – manufactured from cement and fiberglass reinforcement
- Provides consistent quality – produced in a factory controlled environment and meets ASTM C 1325
- Remains dimensionally stable
- Resists moisture and mold
- Cuts and handles easily – patented EdgeTech® Technology allows fasteners to be installed closer to the board's reinforced edge and reduces damage from handling
- Absorbs less water – providing greater open time and increased workability of adhering materials
- Offers performance enhancement options – stronger and lighter alternative to traditional methods



Interior Applications

PermaBase® is a superior underlayment for many interior applications, including:

- **Kitchens**
  - Countertops
  - Backsplashes
- **Bathrooms**
  - Shower and tub enclosures
  - Garden and whirlpool tubs
  - Steamrooms and saunas
- **Special Additions**
  - Swimming pool and whirlpool decks and enclosures
- **Flooring**
  - For kitchens and bathrooms
  - For entryways and foyers
  - For laundry rooms
- **Walls**
  - For bathrooms
  - For accent walls
  - For fireplaces

Exterior Applications

PermaBase provides an excellent substrate for many in-demand exterior applications, including Cement Board Masonry Veneer Wall System (CBMV), Cement Board Stucco System (CBSS), Continuous Insulation (CI), and Exterior Insulation and Finish System (EIFS). PermaBase allows the combination of exterior finishes on one continuous wall sheathing, providing greater design flexibility.

- Commercial exteriors
- Residential exteriors
- Outdoor kitchens
- Decks

Cement Board Masonry Veneer Wall System (CBMV)

Combine the strength and durability of PermaBase with the popular beauty of stone and thin brick veneers. Use in residential and low-rise commercial applications.

Cement Board Masonry Veneer Wall System is designed to:

- Offer a complete, engineered solution for installation
- Provide increased performance by utilizing polymer modified adhesive mortars (designed for hanging materials) vs. type S and N mortars (developed for stacking materials)
- Speed up your schedule – faster, easier and cleaner than traditional metal lath/scratch coat method
- Offer the ability to incorporate an effective water-management system (type and placement of water barrier will vary based on local codes and/or warranties)

Designs you can achieve with this system:

- Use for a variety of building exteriors with manufactured or natural stone and thin brick veneers

Note: A code-approved Water/Air Resistive Barrier (WRB) must first be installed to protect the cavity. For limitations, please see page 19 (Installation Guide).

Cement Board Stucco Wall System (CBSS)

Combine the strength and durability of PermaBase with the performance and aesthetics of reinforced base coats and textured finishes. Use in residential and low-rise commercial applications.

Cement Board Stucco Wall System is designed to:

- Provide increased impact and weather resistance (appropriate for all climates)
- Resist dirt, fading, cracking and peeling – uses 100% acrylic polymers
- Speed up your schedule – easier, cleaner installation than traditional stucco
- Provide drainage system to help prevent water from penetrating behind cladding in frame construction
- Comply with ASTM D 226, protecting approved sheathings/structural components and helping to evacuate incidental water

Designs you can achieve with this system:

- Attachment of special pre-molded shapes
- Variety of finishes – many texture and color options

Note: A code-approved Water/Air Resistive Barrier (WRB) must first be installed to protect the cavity. See page 18 (Installation Guide).

Continuous Insulation

As building codes and building insulation requirements become increasingly stringent, you can count on PermaBase to help meet your substrate needs for Continuous Insulation (CI). CI on the exterior envelope helps to eliminate air and moisture leakage as well as reduce thermal bridging, or the heating/cooling loss transmitted through steel studs. Methods to install the final exterior finish over the exterior insulation are now being refined, including z-furring channels, batten strips and direct fastener applications. Use in all types of construction, including commercial, residential and multi-family.

Advantages Of Creating Continuous Insulation With PermaBase:

- Provides better thermal comfort, lowers heating and cooling costs, reduces likelihood of trapped moisture
- Helps mitigate the loss of heat/air conditioning by insulating the studs
- Allows multiple finishes on one substrate
- Works in all climates – adaptable to varying regional system requirements
- Guarantees 15-year exterior warranty – the industry's leading warranty
- Speeds up your schedule – faster to install than traditional methods

More Reasons PermaBase Is Excellent For Exterior Applications

- **Allows multiple finishes on one substrate**
- **Saves time and labor when compared with field-applied metal lath, brown and scratch coat installations**
- **Works rain or shine – less affected by jobsite weather conditions**
- **Scores and snaps for quick installation**
- **Qualifies for multiple-year system warranties**

PHYSICAL PROPERTIES

Property Method	Test	1/4"	7/16" PLUS	1/2"	5/8"
Water Absorption % By Weight/24 Hours	ASTM C 473	<8	10	<8	<8
Flexural Strength (psi)	ASTM C 947	>1750	750	750	>1000
Fastener Holding (Wet And Dry, lbs.) (0.400" head diameter)	ASTM D 1037	>85	>90	>90	>90
Weight (psf)	ASTM C 473	1.8	2.1	2.9	3.65
Freeze/Thaw (Cycles) Per ANSI A118.9 Procedure B	ASTM C 666	100	100	100	100
Flame Spread/ Smoke Developed	ASTM E 84	0/0	0/0	0/0	0/0
Compressive Strength (psi) (Indentation)	ASTM D 2394	N/A	N/A	2250	2250
Wind Load (psf, Studs 16" o.c.)	ASTM E 330	N/A	30	40	40
Thermal "R"/k Value	Property of Material	0.2/2.7	0.28/2.7	0.37/2.7	0.47/.2.7
Bending Radius (ft.)	Property of Material	N/A	5	5	5
Falling Ball Impact (12" Drop)	ASTM D 1037	pass	pass	pass	pass
Linear Variation (Due to change in moisture content)	ASTM D 1037	<0.07%	0.05%	0.05%	0.05%
Fungus Resistance	ASTM G 21	(No growth)	(No growth)	(No growth)	(No growth)
Mold Growth On Surface	ASTM D 3273*	10	10	10	10

* When tested by an independent laboratory per ASTM D 3273 ("Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber"), PermaBase achieved a panel score of 10, the highest score possible, indicating no mold growth under the laboratory test conditions. The use of PermaBase in actual installations may not produce the same results as were achieved in controlled laboratory conditions. No material can be considered "mold proof," nor is it certain that any material will resist mold indefinitely.

SIZES AND PACKAGING

Size: Thickness, Width And Length	# Of Pcs Per Unit
PermaBase Cement Board	
1/2" x 32" x 5' (12.7 mm x 813 mm x 1524 mm)	50
1/2" x 32" x 8' (12.7 mm x 813 mm x 2438 mm)	50
1/2" x 36" x 4' (12.7 mm x 914 mm x 1219 mm)	50*
1/2" x 36" x 5' (12.7 mm x 914 mm x 1524 mm)	50
1/2" x 36" x 6' (12.7 mm x 914 mm x 1829 mm)	50*
1/2" x 36" x 8' (12.7 mm x 914 mm x 2438 mm)	30
1/2" x 48" x 8' (12.7 mm x 1219 mm x 2438 mm)	30
5/8" x 36" x 5' (15.9 mm x 914 mm x 1524 mm)	35
5/8" x 48" x 8' (15.9 mm x 1219 mm x 2438 mm)	24
3/8" x 48" x 8' (9.5 mm x 1219 mm x 2438 mm)	40*
3/8" x 36" x 5' (9.5 mm x 914 mm x 1524 mm)	50*
3/4" x 48" x 8' (19.0 mm x 1219 mm x 2438 mm)	20*
PermaBase Underlayment	
1/4" x 48" x 4' (7.9 mm x 1219 mm x 1219 mm)	60
1/4" x 36" x 5' (7.9 mm x 914 mm x 1524 mm)	60

* Special Order

For installation instructions and accessories, see page 20.