PermaBase® provides a durable surface designed to withstand prolonged exposure to moisture. Made with Portland cement, aggregate and fiberglass mesh, it works well with exterior applications. Lightweight and easy to install, our EdgeTech® Technology allows a closer nail or screw application.

**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
- EdgeTech® Technology allows for a closer edge fastening and reduces damage from handling

**Works For Exterior Projects**
- 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**
- 15-Year Limited Warranty: Exterior applications

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**Quality To The Core**
1. Reinforced Edge
2. Fiberglass Mesh
3. Cementitious Core
Cement Board Masonry Veneer Wall System (CBMV)

For use in residential and low-rise commercial applications, CBMV offers a complete, engineered solution for installation of adhered veneers. It provides the ability to incorporate an effective water-management system for a variety of building exteriors with manufactured or natural stone and thin brick veneers.

**BENEFITS INCLUDE**

- Engineered system that allows a faster installation while providing superior quality control (manufactured product that must comply with ASTM product specifications)
- Increased performance by utilizing modified adhesive mortars (designed for hanging materials) rather than type S&N mortars (developed for stacking materials)
- Extremely durable with increased resistance to impact and inclement weather
- Approved for use in ASTM 1780, and cement board is cited as an approved substrate for this system by the Masonry Veneer Manufacturers Association (MVMA): *Installation Guide and Detailing Options for Compliance with ASTM C1780*
- Easily allows for the inclusion of continuous installation into the assembly
- Appropriate for all climates, and resists the growth of mold and mildew
- Speed up your schedule – faster, easier and cleaner than traditional metal lath/scratch-coat method
- IBC/IRC compliant; meets ASTM C1325
- PermaBase® is approved as a substrate for direct applied finishes, tile, stone and thin brick in exterior applications, as outlined in UL Evaluation Report ER-22158
- PermaBase® is suitable for use in combustible and noncombustible construction under the IBC and IRC, as outlined in UL Evaluation Report ER-22158

**LIMITATIONS**

- Sheathing selection and installation varies according to type of wall construction
- Code-approved water/air resistive barrier (WRB) must be installed to protect the cavity (type and placement will vary per local building codes and/or manufacturer’s specifications, installation guidelines and warranties)
Cement Board Stucco Wall Systems (CBSS)

For use in residential and low-rise commercial applications, CBSS provides a drainage system to help prevent water from penetrating behind cladding in framed construction. It complies with ASTM D226, protecting approved sheathing/structural components and helping to evacuate incidental water.

**BENEFITS INCLUDE**
- Appropriate for all climates and resists the growth of mold and mildew
- Extremely durable with increased resistance to impact and inclement weather
- Acrylic polymers provide more resistance to fading, cracking and peeling
- Engineered system that allows a faster installation while providing superior quality control (manufactured product that must comply with ASTM product specifications)
- Provides a 15-year exterior warranty – the industry’s best

**LIMITATIONS**
- Follow finish material manufacturer’s instructions for proper installation
- Treat joints in PermaBase® with mesh tape and base coat
- Thin veneer construction can reveal planar irregularities in framing
- Minor cracking at joints may become visible in finished exterior surface
- Exterior finishes applied directly to PermaBase®: Reinforcing mesh must be embedded in base coat (consult exterior finish manufacturer for additional installation requirements)
- Conventional Portland cement plaster systems: Self-furring metal lath must be used over PermaBase® and fastened to studs
- Code-approved water/air resistive barrier (WRB) must first be installed to protect the cavity (type and placement will vary per local building codes and or manufacturer’s specifications, installation guidelines and warranties)

**Cement Board Stucco**
1. eXP® Sheathing  
2. Weather Resistant Barrier  
3. PermaBase® Cement Board  
4. Mesh Tape  
5. Base Coat  
6. Reinforcing Mesh  
7. Primer  
8. Finish Coat  
9. Flashing Tape  
10. Weep Screed

**Wood Board Stucco**
1. Weather Resistant Barrier  
2. PermaBase® Cement Board  
3. Mesh Tape  
4. Base Coat  
5. Reinforcing Mesh  
6. Base Coat  
7. Finish Coat  
8. Flashing Tape  
9. Weep Screed
Continuous Insulation

For use in residential and low-rise commercial applications, Continuous Insulation offers a complete, engineered solution for required structural performance. Including PermaBase® as a component in this system reinforces the building and provides the ability to incorporate an effective water-management system.

**NFPA 285 Approvals**

PermaBase is approved for use in NFPA 285 wall assemblies. Approvals include the following finishes: stucco, manufactured stone, natural stone, thin brick, and calcium silicate stones. Assemblies include options for expanded polystyrene, extruded polystyrene, polyisocyanurate, and polyurethane insulations. For complete systems details, see UL Evaluation Report R22158.

**BENEFITS INCLUDE**

- Engineered system that allows a faster installation while providing superior quality control (manufactured product that must comply with ASTM product specifications)
- Helps mitigate the loss of heat/air conditioning by insulating the studs (reduces thermal bridging)
- Helps eliminate air and moisture leakage
- Appropriate for all climates, resists the growth of mold and mildew, and offers fire protection
- Provides added dimensional stability
- Helps prevent the water/air resistive barrier (WRB) from being compromised as assembly components shift
- Provides a 15-year exterior warranty – the industry’s best

**LIMITATIONS**

- Sheathing selection and installation varies according to type of wall construction
- Code-approved water/air resistive barrier (WRB) must first be installed (type and placement will vary per local building codes and/or manufacturer’s specifications, installation guidelines and warranties)

Continuous Insulation – Z Furring – Installation

1. EXP® Sheathing
2. Weather Resistant Barrier
3. Insulation
4. Z-Furring
5. PermaBase® Cement Board
6. Mesh Tape
7. Mortar
8. Thin Brick Veneer
9. Flashing Tape
10. Weep Screed

Continuous Insulation – Batten Strip

1. Sheathing
2. Weather Resistant Barrier
3. Insulation
4. PermaBase® Cement Board
5. Mesh Tape
6. Mortar
7. Thin Stone Veneer
8. Flashing Tape
9. Weep Screed

Continuous Insulation – Specialty Fastener

1. EXP® Sheathing
2. Weather Resistant Barrier
3. Insulation
4. PermaBase® Cement Board
5. Mesh Tape
6. Base Coat
7. Mesh
8. Base Coat
9. Primer
10. Finish Coat
11. Flashing Tape
12. Weep Screed

This section of the PermaBase Construction Guide provides information on how to utilize PermaBase within both a CBMV System and a Continuous Insulation System. While some typical examples are shown (right) for reference purposes, the specifications and details on how to design and construct individual systems should be obtained from the adhering material or veneer manufacturer of the materials that are being used to complete the system. For more information, go to permabase.com/exteriors.
Installation Guide

Exterior Applications

An ideal substrate for exterior applications, such as:

- Tile applications
- Stucco applications
- Cement board stucco
- Thin brick
- Adhered stone veneer
- Thin porcelain tile
- Ventilated rainscreen facade
- EIFS
- Continuous Insulation
- Outdoor kitchens/grills

INSTALLATION

General: All framing should comply with local building code requirements and be designed to provide support with a maximum allowable deflection of L/360 under all intended live (including wind) and dead loads.

Note: Cut or score PermaBase® on rough side of panel.

Control Joints: For exterior installations, allow a maximum of 16 lineal feet between control joints. Consult finish manufacturer for other requirements. For exterior tile applications, control joints should be spaced a maximum of every 12'. A control joint must be installed but not limited to the following locations: where expansion joints occur in the framing or building (discontinue all cross furring members located behind joint); when boards abut dissimilar materials; where framing material changes; at changes of building shape or structural system; at each story separation. Place control joints at corners of window and door openings, or follow specifications of architect. Control joint cavity shall not be filled with coating or other materials.

WALLS AND CEILINGS

Wall Framing: Studs should be spaced a maximum of 16" o.c. Edges/ends of PermaBase® parallel to framing should be continuously supported. Provide additional blocking when necessary to permit proper PermaBase attachment. Do not install PermaBase® directly over protrusions from stud plane such as heavy brackets or fastener heads.

Ceiling Framing: The deflection of the complete ceiling assembly due to dead load (including insulation, PermaBase®, bonding material and facing material) should not exceed L/360. The dead load applied to the ceiling frame should not exceed 10 psf. Ceiling joist or furring channel should not exceed 16" o.c. (Edges of PermaBase® parallel to framing should be continuously supported.) Provide additional blocking when necessary to permit proper PermaBase® attachment.

Water Barrier: While PermaBase® is unaffected by moisture, a water/air resistive barrier (WRB) must be installed to protect the cavity. The type and specific placement or location of the water barrier will vary based on local building codes and/or manufacturers’ warranties. Consult the WRB manufacturer’s recommendations for specific installation guidelines.

PermaBase® Cement Board: Apply PermaBase® with ends and edges closely butted but not forced together. Stagger end joints in successive courses. Drive fasteners into field of cement board first, working toward ends and edges. Space fasteners maximum 8" o.c. into framing for walls, 6" o.c. into joists for ceilings with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges.

Joint Reinforcement: Trowel bonding material to completely fill the tapered recessed board joints and gaps between each panel. On non-tapered joints, apply a 6" wide, approximately 1/16" thick coat of bonding material over entire joint. For all joints, immediately embed 4" alkali-resistant fiberglass mesh tape fully into applied bonding material and allow to cure. Same bonding material should be applied to corners, control joints, trims or other accessories. Feather bonding material over fasteners to fully conceal.
Fasteners
PermaBase corrosion resistant screws or equivalent, 1-1/4" or 1-5/8" long, for use with wood framing. Type S-12 screws or equivalent, 1-1/4" or 1-5/8" long, for use with 20 gauge or heavier steel framing. Galvanized roofing nails, 1-1/2" long with hot dipped galvanized coating for use with wood framing. Nails should meet Federal Specification #FF-N105B/type 20.

Joint Reinforcement
PermaBase mesh tape must be used on all edges and cuts made to size. Use 2" wide polymer-coated (alkali resistant) mesh tape for interior applications and 4" wide polymer-coated (alkali resistant) mesh tape for exterior applications.

Bonding Materials
Treat joint and set facing material, preferably with latex-Portland cement mortar or with dry-set (thin-set) mortar. All mortars should comply with ANSI A118.1, A118.4 or A118.15 standards. Type 1 organic adhesive meeting ANSI A-136.1 may be utilized for interior use only.

Installation Accessories
For a seamless installation, we recommend PermaBase Tape and PermaBase Screws.

**Fasteners**

Fasteners corrosion resistant screws or equivalent, 1-1/4" or 1-5/8" long, for use with wood framing. Type S-12 screws or equivalent, 1-1/4" or 1-5/8" long, for use with 20 gauge or heavier steel framing. Galvanized roofing nails, 1-1/2" long with hot dipped galvanized coating for use with wood framing. Nails should meet Federal Specification #FF-N105B/type 20.

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PermaBase was designed to provide extra protection against mold and mildew. When tested by an independent laboratory, PermaBase received the highest possible ratings on ASTM G 21 and D 3273. 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 or mildew indefinitely. When used in conjunction with good design, handling and construction practices, PermaBase can provide increased mold resistance. As with any building material, avoiding water exposure during handling, storage and installation, and after installation is complete, is the best way to avoid the formation of mold or mildew.

Mold And Mildew Resistance

National Gypsum Company will not be liable for products claimed to be defective where the defect resulted from causes not within National Gypsum’s control, or which arose or occurred after shipment, including but not limited to accidents, misuse, mishandling, improper installation, contamination or adulteration by other materials or goods, or abnormal conditions of temperature, moisture, dirt or corrosive matter.

Any claim that products sold by National Gypsum Company were defective or otherwise did not conform to the contract of sale is waived unless the customer submits it in writing to National Gypsum within thirty (30) days from the date the customer discovered or should have discovered the defect or non-conformance. No legal action or proceeding complaining of goods sold by National Gypsum may be brought by the customer more than one year after the date the customer discovered or should have discovered the defect or problem of which it complains.

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