MAPEI®

Mapeguard Board

Rigid, Lightweight, Waterproof, Foam Backer Board

DESCRIPTION

Mapeguard Board is a multipurpose, premium-performance, lightweight, rigid, waterproof backer-board panel that is made with a high-density, extruded polystyrene core. This backer board features a high-strength, waterproof membrane and facer on both sides to provide water and vapor protection. *Mapeguard Board* is for use under ceramic tile and stone installations for both residential and commercial interior applications. The uniquely engineered, multi-layered design is available in thicknesses from 1/4" to 2" (6 mm to 5 cm) for use on walls, floors, ceilings and countertops, as well as for fabrication of room partitions, benches, seats and furnishing elements, delivering a dimensionally stable substrate.

FEATURES AND BENEFITS

- Rigid and impact-resistant board
- High-density, polystyrene, waterproof core
- Coated with a superior-performing waterproof membrane and facer
- Light-colored, durable surface
- Low perm rating; approved for use in steam rooms and showers
- Tab washers not required on floors and walls
- Easy to cut with a standard utility knife without mess
- Quick and easy to apply
- Lightweight and easy to handle
- High flexural strength
- Dust-free cutting
- Available in multiple thicknesses
- Attaches to wood or metal framing
- Lifetime system warranty when combined with other qualifying products

INDUSTRY STANDARDS AND APPROVALS

- ASTM: C627 (Robinson) service rating of "Extra Heavy." See the "Product Performance Properties" chart below.

WHERE TO USE

- Tile installations on walls, floors and ceilings
- Interior residential/commercial walls and ceilings
- Interior residential floors
- Backsplashes, countertops and vanities
- Showers and tub surrounds
- Steam rooms and steam showers
- Fabrication of shower benches, shelves, seats, niches and curbs
- Partition walls
- Bathtub platforms

LIMITATIONS

- For interior use only
- Do not use over substrates containing asbestos, presswood, particleboard, pressure- or oil-treated plywood, Lauan plywood, Masonite, self-stick tile, metal or fiberglass surfaces, epoxy floors or dimensionally unstable materials.
- For ceiling applications, use recommended tab washers and screws.

- *Mapeguard Board* is waterproof, but to maintain a waterproof installation, all joints, penetrations and fasteners must be sealed. Apply *Mapelastic® AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric*; an alternate method is to use *Mapeguard WP ST* waterproofing sealing tape installed with a MAPEI polymer-modified mortar. Refer to the appropriate product Technical Data Sheet (TDS).
- Do not use when hydrostatic pressure exists.
- Do not expose unprotected *Mapeguard Board* to weather for more than 30 days.
- *Mapeguard Board* must be covered with ceramic tile or stone; it is not approved as a wear layer.
- Do not use in submerged applications.
- Use protection boards for temporary cover before tiling horizontal surfaces.
- Do not use in applications where *Mapeguard Board* will be exposed to temperatures of 165°F (74°C) or greater.
- Do not use premixed adhesive products such as mastic to set tile over *Mapeguard Board*.
- Tiles must be suitable for floor installations and have a minimum thickness of 7/32" (5.5 mm).
- Do not overdrive screws. Replace any that are stripped.

Note: On occasion, dimensionally weak natural stone tile that normally would not be categorized as moisture-sensitive (such as travertine, limestone, marble and agglomerates) can exhibit doming, cupping or curling when large-and-heavy-tile mortars are used over impervious panels such as *Mapeguard Board*. When installing natural stone, always do a mockup area of the proposed installation and allow materials to reach a full cure to ensure the desired effect. For details on these methods or materials, contact MAPEI's Technical Services Department before installation or design.

SUITABLE SUBSTRATES

- Wood- or metal-framed walls and ceilings
- Concrete (cured for at least 28 days)
- Masonry cement block and brick

SURFACE PREPARATION

- All substrates must be structurally sound, flat, stable, dry, clean and free of any substance or condition that may reduce or prevent proper adhesion.
- For direct-bond applications, the concrete surface must be clean and porous.
- See the "Surface preparation requirements" reference guide in the Tile & Stone Installation Systems section of MAPEI's Website.

PRODUCT APPLICATION

- On wall and floor applications, screws do not require tab washers.
- On ceiling applications, tab washers are required with screws.

- For waterproofing of all installation joints, penetrations and fasteners:
  - Seal with MAPEI's *Reinforcing Fabric* and *Mapelastic AquaDefense* or *Mapelastic Turbo*.
  - Or, use *Mapeguard WP 200* and *Mapeguard WP ST* installed with an ANSI A118.4 or C2E polymer-modified mortar.
- When using *Mapeguard Board* on the floor, the minimum size of approved tile is 8" x 8" (20 x 20 cm).
- *Mapeguard Board* is approved for countertops but is not to be used where extremely hot items will be placed directly on the tile.
- Follow these screw-sizing requirements based upon board thickness:
  - 1-5/8" (41 mm) screw with 1/4" (6 mm), 1/2" (12 mm) and 5/8" (16 mm) thick *Mapeguard Board*
  - 2" (5 cm) screw with 1" (2.5 cm) thick *Mapeguard Board*
  - 3" (7.5 cm) screw with 2" (5 cm) thick *Mapeguard Board*
- If *Mapeguard Board* is punctured during installation, recoat the punctured area and 2" (5 cm) around the area with *Mapelastic AquaDefense* or *Mapelastic Turbo*.
- *Mapeguard Board* must be covered with protection board before tiling to protect from foot traffic when installing on horizontal surfaces.

WALLS

Fastening

- Wood framing
  - For 2" x 4" (5 x 10 cm) with a maximum span of 16" (41 cm) o.c., use a minimum of 1/2" (12 mm) *Mapeguard Board*.
  - For stud spacing of 19.2" (49 cm) o.c., use a minimum of 5/8" (16 mm) *Mapeguard Board*.
  - Fasten with recommended-length screws that are spaced 12" (30 cm) o.c., with countersink screw heads flush with the board surface.
  - Use stainless-steel or galvanized screws.
  - For ceilings, use stainless-steel or galvanized tab washers.
- Steel framing
  - Minimum thickness of 20-gauge structural with maximum span of 16 (41 cm) o.c.
  - Minimum of 1/2" (12 mm) *Mapeguard Board*
  - Fasten to studs using 1-5/8" (41 mm) screws.
  - Fasten with recommended-length screws that are spaced 12" (30 cm) o.c., with countersink screw heads flush with the board surface.
  - Use stainless-steel or galvanized screws.

- For ceilings, use stainless-steel or galvanized tab washers.

Waterproofing installation steps

Option 1

1. Starting at the bottom of the wall, apply a bead of sealant along the top edge of the tub or shower pan and then immediately apply *Mapeguard Board*.

2. For a waterproofing system, use *Mapelastic AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric* to seal all penetrations, fasteners and panel joints. Any gap that is over 1/8" (3 mm) will need to be first filled using a MAPEI polymer-modified mortar. When dry, proceed with the liquid-applied *Mapelastic AquaDefense* or *Mapelastic Turbo* and *Reinforcing Fabric*.

3. All fasteners must be completely covered with *Mapelastic AquaDefense* or *Mapelastic Turbo* and *Reinforcing Fabric* to provide a seal against water penetration.

Option 2

1. Starting at the bottom of the wall, apply a bead of sealant along the top edge of the tub or shower pan and then immediately apply *Mapeguard Board*.

2. To create a watertight system using *Mapeguard WP ST* waterproofing seaming tape, *Mapeguard PIC* inside or *Mapeguard POC* outside corners and *Mapeguard VC* or *Mapeguard PC* collars, start with the corners. Apply an approved MAPEI polymer-modified mortar with a 1/4" x 3/16" (6 x 4.5 mm) V-notched trowel. Press the pre-formed corner firmly into the adhesive. Remove any trapped air and guarantee full adhesion to the material by spreading the adhesive from the inside out using a trowel or straightedge with rounded corners.

3. Continue by troweling polymer-modified mortar along the floor-to-wall transition from the corner outward for the first strip of *Mapeguard WP ST* sealing tape. Overlap the corners by a minimum of 2" (5 cm).

4. Lay the *Mapeguard WP ST* sealing tape and remove all air pockets and excess material as with the corner piece.

5. For any sections where two strips of *Mapeguard WP ST* sealing tape will be joined, be certain to overlap the material by 2" (5 cm).

6. Continue with these steps around the perimeter of the installation.

7. Treat the vertical corners for *Mapeguard WP ST* sealing tape next in the same manner as the floor-to-wall transitions were installed. Overlap the corners by a minimum of 2" (5 cm).

8. Treat pipe penetrations and mixing valves by applying polymer-modified mortar with a 1/4" x 3/16" (6 x 4.5 mm) V-notched trowel. Slide the appropriate *Mapeguard* collar over the pipe or mixing valve and press firmly into the adhesive. The rubber gasket will seal around the pipe or mixing valve. Remove any trapped air and guarantee full adhesion to the material by spreading

the adhesive from the inside out using a trowel or straightedge with rounded corners.

9. Washer and fastener penetrations can be covered with *Mapeguard WP ST* sealing tape using a MAPEI polymer-modified mortar.

10. There should not be excessive overlapping. For example, at the corner, the *Mapeguard WP ST* sealing tape that leaves the corner and protects the floor-to-wall transitions should overlap with the pre-formed corner piece, but not the pre-formed corner piece and the adjacent *Mapeguard WP ST* sealing tape.

CEILINGS

Fastening

- Framing members should not exceed 16" (41 cm) o.c.; use a minimum of 1/2" (12 mm) thick *Mapeguard Board*. Ensure that the edges of *Mapeguard Board* are continuously supported. Fasten boards as outlined in "Fastening" within the "Walls" section of this document. Space tab washers and screws every 6" (15 cm) o.c., for ceilings.

Installation

- Install *Mapeguard Board* as outlined in Option 1 or 2 within the "Walls" section of this document, but 1-1/4" (3.2 cm) tab washers must be used with the 1-5/8" (41 mm) screws.

FLOORS

General

- Surfaces must be structurally sound, flat, stable and rigid enough to support ceramic/stone tile and similar finishes. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/360 for thin-bed ceramic tile installations or L/720 for thin-bed stone installations. The tile size should be at least 8" x 8" (20 x 20 m). Architects, builders and design professionals must specify the location of control joints. Also see the TCNA Handbook, Installation Method EJ171 – Movement Joint Design Essentials, for industry guidelines.

Fastening

Wood floors

- Framing: Maximum 16" (41 cm) on center joist spacing

- Subfloor: Minimum thickness 3/4" or 19 mm nominal (23/32" or 18 mm actual) exterior-grade plywood or OSB fastened and glued firmly to joists as per TCNA Handbook, Installation Method F175-13 – Cementitious Coated Foam Backer Board. Adhere *Mapeguard Board* to the exterior-glue plywood using a mortar meeting ANSI A118.11 and classified as ISO C2E (or better) thinset with a 1/4" x 1/4" (6 x 6 mm) square-notch trowel. Fasten boards directly to the subfloor using a 1-5/8" (41 mm) screw. Fasteners should be spaced a maximum of 12" (30 cm) o.c. All fastener heads should be countersunk

flush with the surface of the board. Where two boards meet, a screw should be installed on both sides of the seam.

<u>Installation</u>

1. Apply a setting bed of a MAPEI polymer-modified mortar over the subfloor with a 1/4" x 1/4" x 1/4" (6 x 6 x 6 mm) square-notched trowel.

2. All boards should be laid with staggered joints.

3. Fasten boards as outlined in the "Fastening" section above.

4. Fill all joints with a MAPEI polymer-modified mortar and embed 2" (5 cm) fiberglass-mesh cement board tape in dry areas.

Note: *Mapeguard Board* is completely waterproof. If the area below the backer board must be kept dry, all fasteners, penetrations and joints must be sealed with *Mapelastic AquaDefense* or *Mapelastic Turbo* waterproof membrane, or *Mapeguard WP ST* sealing tape and a MAPEI polymer-modified mortar.

Concrete floors

• Concrete must be fully cured, flat and clean.

<u>Installation</u>

1. Any depressions should be filled with an appropriate MAPEI patching or leveling mortar.

2. Apply a setting bed of a MAPEI polymer-modified mortar over the concrete floor with a 1/4" x 1/4" x 1/4" (6 x 6 x 6 mm) square-notched trowel.

3. Make certain that there are no voids beneath the panel and that it is fully supported.

4. All boards should be laid with staggered joints.

5. Allow mortar to harden before taping joints.

6. Fill all joints with a MAPEI polymer-modified mortar and embed 2" (5 cm) alkali-resistant, fiberglass-mesh cement board tape in dry areas.

Note: *Mapeguard Board* is completely waterproof. If the area below the backer board must be kept dry, all fasteners, penetrations and joints must be sealed with *Mapelastic AquaDefense* or *Mapelastic Turbo* waterproof membrane, or *Mapeguard WP ST* sealing tape and a MAPEI polymer-modified mortar.

COUNTERTOPS

• Use the appropriate thickness of *Mapeguard Board* to replace the backer board for countertop installations following TCNA Method C513.

<u>Fastening</u>

1. Apply a continuous bead of sealant to the top layer of plywood along the perimeter and a "X" pattern on the surface.

2. Adhere *Mapeguard Board* to the top of the counter. Press in place, removing any excess sealant.

3. Use the appropriate screw every 12" (30 cm) along edges and on the interior surface to fasten *Mapeguard Board* to the plywood.

<u>Installation</u>

The following steps must be followed to maintain the waterproof integrity of *Mapeguard Board*:

1. First, cut and install the bullnose piece to cover the front edge and apron of the countertop. Next, cut *Mapeguard Board* to fit the countertop covering the bullnose piece. Fasten to the counter as described in the "Fastening" section above.

2. Before installing adjacent boards, apply a bead of sealant to the edges of the first board.

3. Install the next board as outlined above.

4. All boards must be fitted tightly together, allowing sealant to ooze from the joint.

5. All excess sealant should be spread thin, ensuring a continuous seal at the joint.

6. All seams and fastener penetrations can be covered with *Mapelastic AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric*, or with *Mapeguard WP ST* sealing tape and a MAPEI polymer-modified mortar.

7. Wrap the front edge with *Mapeguard WP ST* sealing tape using a MAPEI polymer-modified mortar.

8. After drilling holes in the corners, cut out the hole for the sink using a reciprocating saw.

9. Apply sealant around the cutout and insert the sink. Follow the sink manufacturer's installation directions.

10. When dry or set, the counter can then be tiled.

CURBS, SEATS AND BENCHES

<u>Installation</u>

1. Measure, cut and dry-fit all pieces from 2" (5 cm) *Mapeguard Board* before installing.

2. All seat or bench perimeters should be supported by 2" (5 cm) *Mapeguard Board* installed vertically.

3. Use a MAPEI polymer-modified mortar when assembling the curbs, seats and benches.

4. Spacing between vertical supports should not exceed 16" (41 cm) o.c.

5. When installing corner seats, the appropriate board edges should be mitered for a tighter fit.

6. Bench and seat supports can be cut on an angle to create a slope for the seat top.

7. All boards must be fitted tightly together, allowing the MAPEI polymer-modified mortar to ooze from the joint.

8. All excess adhesive should be spread thin, ensuring a continuous seal at the joint.

9. Exposed edges can be wrapped with 2" (5 cm) wide alkaline, mesh-resistant tape embedded in a MAPEI polymer-modified mortar. When the polymer-modified

mortar is dry, waterproof using *Mapelastic AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric*.

10. All coves and corners can be treated with alkaline-resistant tape and a MAPEI polymer-modified mortar. When the polymer-modified mortar is dry, waterproof using *Mapelastic AquaDefense* or *Mapelastic Turbo* and *Reinforcing Fabric*. (Alternatively, use *Mapeguard WP ST* sealing tape with a MAPEI polymer-modified mortar.)

TUB SURROUNDS AND PLATFORMS

Installation

1. When installing *Mapeguard Board* to tub surrounds and platforms, choose the appropriate thickness that is required for the application.

2. On walls, *Mapeguard Board* must be attached to the frame, which is load-bearing and fully supported, and be installed over the lip of the tub.

3. Follow fastening and installation instructions in the "Walls" section above.

MASONRY, BRICK OR CONCRETE WALLS

Installation

1. The substrate needs to be properly prepared and flat. Remove all surface contaminants from the substrate that may weaken the bond between *Mapeguard Board* and the wall.

2. Apply a MAPEI polymer-modified mortar to the substrate with the appropriate notched trowel, and then skimcoat the back of the *Mapeguard Board*.

3. Apply the panels to the wall and firmly press them in place to ensure full coverage.

4. Set the individual panels and align them appropriately.

5. For a waterproof installation, use *Mapelastic AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric* at all panel joints. Note: Any gap that is over 1/8" (3 mm) will need to be first filled using a MAPEI polymer-modified mortar with a 2" (5-cm) alkali-resistant tape. When it is dry, then proceed with the liquid-applied *Mapelastic AquaDefense* or *Mapelastic Turbo* along with *Reinforcing Fabric*.

6. To create a watertight system using *Mapeguard WP ST* sealing tape, *Mapeguard PIC* inside or *Mapeguard POC* outside corners and *Mapeguard VC* or *Mapeguard PC* collars, start with the corners. Apply a suitable MAPEI polymer-modified mortar with a 1/4" x 3/16" (6 x 4.5 mm) V-notched trowel. Press the pre-formed corner firmly into the adhesive. Remove any trapped air and guarantee full adhesion to the material by spreading the adhesive from the inside out using a trowel or straightedge with rounded corners.

7. Continue with polymer-modified mortar along the floor-to-wall transition from the corner outward for the first strip of *Mapeguard WP ST* sealing tape. Overlap the corners by a minimum of 2" (5 mm).

8. Lay the *Mapeguard WP ST* sealing tape and remove all air pockets and excess material as with the corner piece.

9. For any sections where two strips of *Mapeguard WP ST* sealing tape will be joined, be certain to overlap the material by 2" (5 cm).

10. Continue with these steps around the perimeter of the installation.

11. Treat the vertical corners for the *Mapeguard WP ST* sealing tape next in the same manner as the floor-to-wall transitions were installed. Overlap the corners by a minimum of 2" (5 cm).

12. Treat pipe penetrations and mixing valves by applying polymer-modified mortar with a 1/4" x 3/16" (6 x 4.5 mm) V-notched trowel. Slide the appropriate *Mapeguard* collar over the pipe or mixing valve and press firmly into the adhesive. The rubber will seal around the pipe or mixing valve. Remove any trapped air and guarantee full adhesion to the material by spreading the adhesive from the inside out using a trowel or straightedge with rounded corners.

13. An important point to remember is that there should not be excessive overlapping. For example, at the corner, the *Mapeguard WP ST* sealing tape that leaves the corner and protects the floor-to-wall transitions should overlap with the pre-formed corner piece, but not the pre-formed corner piece and the adjacent *Mapeguard WP ST* sealing tape.

14. The tiles can be installed immediately using polymer-modified mortar. Choose an appropriate notched trowel to match the tile format and back-butter the tiles, if necessary, to attain full coverage.

Note: *Mapeguard Board* is completely waterproof. If the area below the backer board must be kept dry, all fasteners, penetrations and joints must be sealed with *Mapelastic AquaDefense* or *Mapelastic Turbo* waterproof membrane with *Reinforcing Fabric*, or *Mapeguard WP ST* sealing tape and a MAPEI polymer-modified mortar.

Note: See the "Waterproofing installation steps" section on the use of *Mapeguard Board* in bonded waterproofing assemblies.

Use a MAPEI mortar meeting the ANSI A118.4, ANSI A118.11 or ANSI A118.15 standard, or classified as at least ISO 13007 C2E or C2F.

EXPANSION JOINTS

• Honor expansion joints through *Mapeguard Board*, tiles and grout per industry standards.

• When necessary, cut tiles along both edges of the expansion joints. Do not allow tiles and mortar to overlap the expansion joints.

• Provide for movement as required by TCNA Method EJ171 or TTMAC Specification Guide 09 30 00, Detail 301MJ.

PROTECTION

- Provide for dry, heated storage on site and deliver materials at least 24 hours before tilework begins.

- Do not store *Mapeguard Board* in direct sunlight.

- Do not leave *Mapeguard Board* exposed when installing on horizontal surfaces; rather, protect it from foot traffic and other trades before installation of tile or stone.

- Protect *Mapeguard Board* from spills, contamination and damage before and during tilework to ensure an adequate bond with the mortar.

- If the waterproof coating on *Mapeguard Board* is punctured during installation or from jobsite construction activity, recoat the punctured area and 2" (5 cm) around the area with *Mapelastic AquaDefense* or *Mapelastic Turbo* with *Reinforcing Fabric*, or install *Mapeguard WP 200* waterproofing sheet. Refer to the TDS for instructions.

- Refer to the TDS of the selected MAPEI tile-setting mortar regarding protection from heavy traffic, frost and rain.

Product Performance Properties

Test Method	Description	Result
ASTM E96	Water Vapor Transmission Procedure E	Pass
ASTM / ANSI A118.10 / ASTM D4068	Waterproofness	Pass
ASTM / ANSI A118.10	Shear bond strength: 7-day dry, 7-day immersion	Pass
ASTM D1623	Tensile bond	Pass
ASTM D1621	Compressive strength	Pass
ASTM C473	Flexural strength	59.10 lbs. (26.08 kg) MD, 57.11 lbs. (25.9 kg) CD
ASTM D1037	Linear expansion	Pass
ASTM G21	Resistance to fungi	Pass
PS106 5.7 / ASTM D1037	Point impact load test	Pass
PS106 5.8	Area impact load test for shower wall surrounds	Pass
ASTM E84	Flame spread	Pass
ASTM E84	Smoke developed	Pass
NFPA	Class rating	Class A
IBC	Class rating	Class A
ASTM C518	Thermal resistance	R-value 1.859
IAPMO PS106	Fungus and microorganism growth resistance	Pass
ASTM C473	Nail pull resistance	46.04 lbs. (20.9 kg)

Packaging

Thickness	Width	Length	Sheets per pallet
1/4" (6 mm)	3' (0.91 m)	5' (1.52 m)	84
1/2" (12 mm)	3' (0.91 m)	5' (1.52 m)	60
1/2" (12 mm)	4' (1.22 m)	8' (2.44 m)	55
5/8" (16 mm)	3' (0.91 m)	5' (1.52 m)	50
1" (2.5 cm)	3' (0.91 m)	5' (1.52 m)	30
2" (5 cm)	3' (0.91 m)	5' (1.52 m)	15

Approximate Coverage

Size	Coverage
3' x 5' (0.91 x 1.52 m) sheet	15 sq. ft. (1.39 m²)
4' x 8' (1.22 x 2.44 m) sheet	32 sq. ft. (2.97 m²)

RELATED DOCUMENTS

Reference guide: "Surface preparation requirements" for tile and stone installation systems*

At www.mapei.com

Refer to the SDS for specific data related to health and safety as well as product handling.

For information on MAPEI's commitment to sustainability and transparency, as well as how MAPEI products may contribute to green building standards and certification systems, contact sustainability_USA@mapei.com (USA) or sustainability-durabilite@mapei.com (Canada).

We proudly support the following industry organizations:

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Edition Date: January 25, 2022
MK 9268 (21-3200)