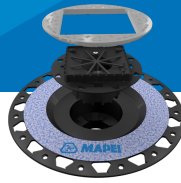


Mapeguard Drain

Drain with Bonding Flange



DESCRIPTION

Mapeguard® Drain, with an integrated bonding flange and low profile for floor applications, is easy to install and solves common problems associated with shower pans and wet environments in residential, light commercial and commercial projects. *Mapeguard Drain* is designed to be used with *Mapeguard Pre-Formed Shower Tray* and floated mortar-bed installations complemented by MAPEI's industry-recognized topical waterproofing system products.

FEATURES AND BENEFITS

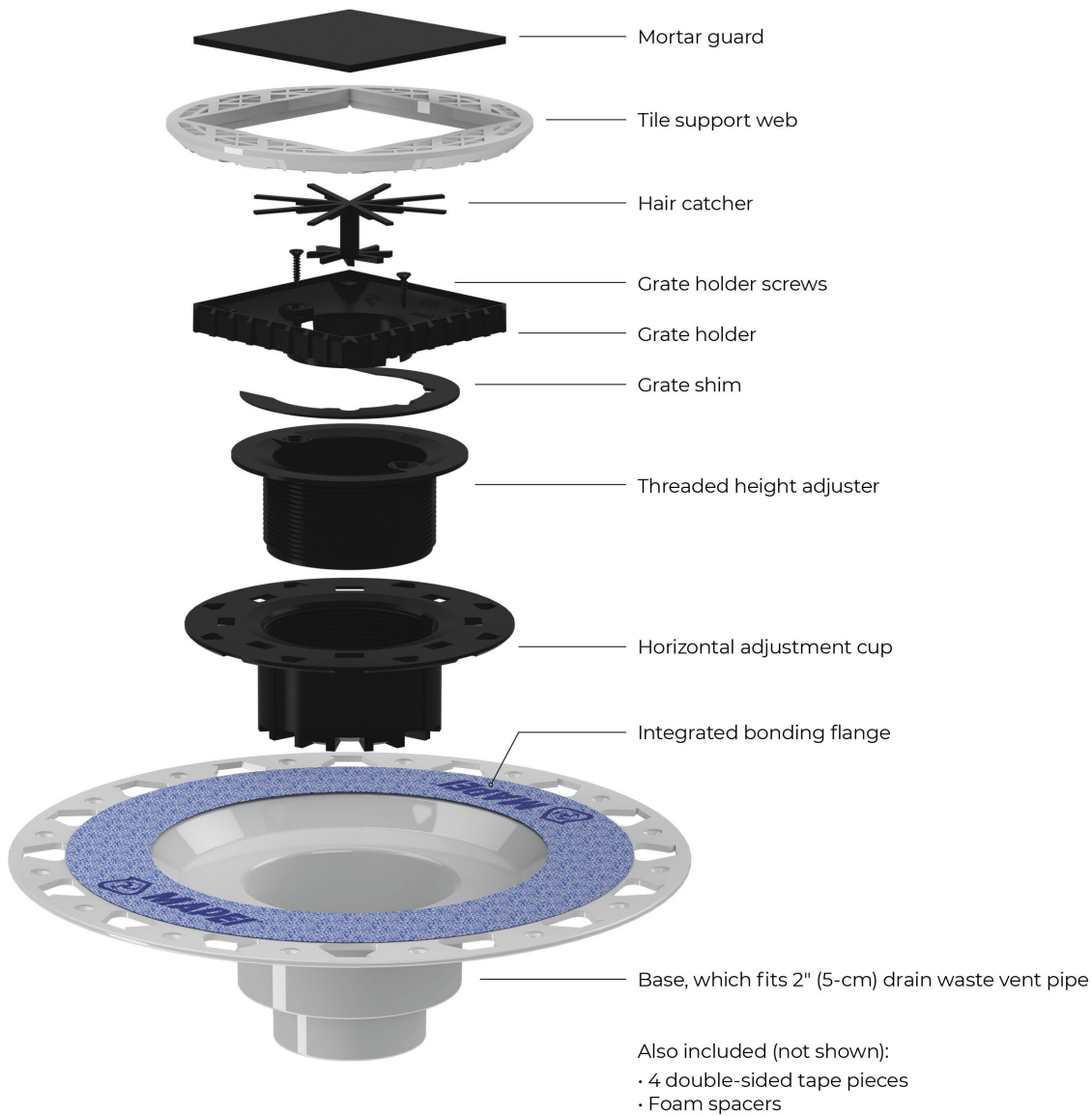
- Integrated bonding flange
- Innovative weeping system
- Made from heavy-duty PVC or ABS plastic
- Easy to install
- Tile support web for mosaic tile
- Allows 360-degree adjustment
- Easy alignment and placement of horizontal adjustment cup
- Designed for liquid and sheet waterproofing
- Threaded height adjuster to accommodate tile and stone thicknesses, with lock-in-place precision
- Drain assembly solves several common problems, including discoloration of stone and grout around drains due to trapped moisture

- Grate shim for perfect grate holder leveling adjustment if needed
- Mortar guard provides plumbing protection during installation
- Drain grate holder with inner sloped design
- Fits standard 2" (5 cm) drain waste vent pipe
- Complete single-source shower pan installation system
- Best-BackedSM system warranty available

Note: MAPEI mortars must meet the ANSI A118.4H, ANSI A118.11 or ANSI A118.15H standard or better, or be classified as at least ISO 13007 C2E or C2F.

Note: To achieve one-day installation of a *Mapeguard* Shower System, use a MAPEI rapid-setting, polymer-modified large-and-heavy-tile mortar that is rated as A118.4FH or better, as well as a MAPEI waterproofing membrane and grout.

Components of Mapeguard Drain



INDUSTRY STANDARDS AND APPROVALS

- Certified to meet the ASME A112.18.2/CSA B125.2-2020 edition standards
- Certified by CSA Group as conforming to the requirements of the UPC, IPC, California Plumbing Code and the Plumbing Code of Canada

WHERE TO USE

- For interior use only
- Residential (such as single-family homes and condominiums), light commercial (such as office buildings and apartments) and commercial (such as hotels, hospitality facilities, health clubs, institutions and dormitories)
- Showers, bathrooms, laundries and kitchens
- Tub-to-shower conversions

LIMITATIONS

- Do not expose to solvents or other harsh chemicals.
- Installation must be covered with ceramic, porcelain or stone tile. Prior to finishing, use caution to protect waterproofing from penetration or damage.
- Mortars and grouts for ceramic tile, pavers, brick and stone are not replacements for waterproofing membranes. When a waterproofing membrane is required in seams, connections or corners, use an approved MAPEI waterproofing membrane.
- See the ANSI A108.1 industry standard for details on mortar-bed installations.
- For calculating suitability for live load or if the suitability of the structure is unclear, consult a structural engineer or design consultant.
- Do not apply a mud bed directly over plywood*, oriented strand board (OSB)*, metal, fiberglass, plastic, lightweight concrete, gypsum underlayment, particleboard or hardwood floors.

SUITABLE SUBSTRATES

- Concrete (cured for at least 28 days)
- Industry-approved exterior-grade plywood*
- APA Sturd-I-Floor Exposure 1 OSB*
- Cement mortar bed
- Backer board
- Adequately designed wood frame floor systems. See details in the handbook of the Tile Council of North America (TCNA) or Terrazzo, Tile and Marble Association of Canada (TTMAC).

Consult MAPEI's Technical Services Department for installation recommendations regarding substrates and conditions not listed.

* Interior use only with a cleavage membrane

SURFACE PREPARATION

- All suitable substrates should be structurally sound, stable, dry, clean and free of any substance or condition that may reduce or prevent proper adhesion.
- The shower installation should meet all applicable building code requirements.
- Installations require a minimum slope of 1/4" per foot (6 mm per 0.30 m) toward the drain.
- For waterproofing requirements, refer to the TCNA Handbook, ANSI standards and local codes.
- Follow all applicable industry standards and guidelines for mortar-bed installations within shower receptors, see the "Applicable Industry Codes, Standards and Guidelines" section in the TCNA Handbook.

Drain outlet preparation

1. Locate and cut a hole in the substrate to accommodate the drain outlet and connection to the waste line.
2. Limit the diameter of the hole to 4-1/4" to 4-1/2" (10.8 to 11.4 cm) maximum to ensure proper support for the drain and tile assembly.

See the "Surface preparation requirements" reference guide in the Tile & Stone Installation Systems section of MAPEI's Website.

PRODUCT APPLICATION

Install *Mapeguard Drain* and *Mapeguard Drain Grate* per TCNA B422 using a MAPEI waterproofing membrane. Actual field performance will depend on installation methods and site conditions. To achieve one-day installation of a *Mapeguard Shower System*, use a mortar bed, thin-set mortar, waterproofing membrane and grout that are rapid-setting. Read all installation instructions thoroughly before installation.

Drain installation with *Mapeguard Pre-Formed Shower Tray*

1. Always dry-fit *Mapeguard Drain* before placing. The integrated flange point drain can be installed before or after installing the shower tray. Note: It is easier to install before the shower tray.
2. In new construction where the stub-out waste pipe is installed, measure the pipe from 1-3/4" to 1-7/8" (4.4 to 4.8 cm) from the top of the substrate to the pipe. Mark and then cut the pipe at this mark.
3. Dry-fit *Mapeguard Drain* to the pipe setting flush on top of the substrate. Use a torpedo level to verify that the *Mapeguard Drain* base is level in both directions.
4. In renovation construction, temporarily install a 2" (5 cm) PVC or ABS plastic riser into the P-trap. Mark the riser flush with the subfloor and remove the pipe after marking.
5. Measure down 1-3/4" to 1-7/8" (4.4 to 4.8 cm) from this mark flush with the top of the subfloor. Mark this measurement on the pipe and cut.
6. Dry-fit the cut pipe (riser) to the P-trap to be sure that the riser is correct in length. Dry-fit *Mapeguard Drain* to the pipe. Use a torpedo level to verify that the *Mapeguard Drain* base is level in both directions.
7. For PVC plastic assemblies, apply a PVC primer to both ends of the PVC pipe, the P-trap hub and the drain base hub that will receive the cement. Do not apply a primer to ABS plastic assemblies, as it would affect the integrity of the ABS plastic.
8. For PVC plastic assemblies, wait for the primer to dry.
9. Once the primer is dry, apply a PVC- or ABS-specific cement to the hub of the P-trap, to both ends of the pipe and lastly to the hub of drain base.

10. Using a 3/4" x 9/16" x 3/8" (19 x 14 x 10 mm) U-notched trowel or 1/4" x 3/8" x 1/4" (6 x 10 x 6 mm) square-notched trowel, apply a MAPEI polymer-modified large-and-heavy-tile thin-set mortar (hereafter referred to simply as "MAPEI polymer-modified mortar") that is ANSI A118.4H or better to the substrate and to the back of the drain body only where the support ring will be placed and the back of the drain body flange that will rest on the support ring. The inner diameter of the drain body will be supported by sitting directly on the substrate without mortar. Next, center and set the support ring supplied with the shower tray into the fresh mortar, troweling mortar over the top side of the ring to support the drain flange around the drain opening.
11. Immediately join the riser to the properly supported P-trap, followed by joining the drain base to the riser.
12. Permanently assemble the *Mapeguard Drain* base to the riser and all parts in a twisting motion while connecting the pipe to the hubs of the P-trap and drain base, while simultaneously firmly embedding the drain body into the mortar to ensure solid support.
13. Be sure to use a torpedo level to verify that the drain base placement is level in both directions.
14. Next, it is time to assemble the drain using the *Mapeguard Drain* components. Apply the four supplied pieces of double-sided tape to the bottom of the flange of the horizontal adjustment cup. This removes the need for setting the drain in place with thin-set mortar. It also allows any subsurface water to freely flow from the weeping horizontal adjustment cup to the drain.
15. Once the horizontal adjustment cup is in place inside of the *Mapeguard Drain* base, position the drain grate holder on top of the threaded height adjuster and temporarily remove the mortar guard.
16. If necessary, use the supplied grate shim to level the grate holder before screwing it into place.
17. Screw the drain grate holder onto the threaded height adjuster.
18. Attach the *Mapeguard Drain Grate* (sold separately) to the drain grate holder for proper tile alignment. MAPEI offers the choice of three finishes: Polished Stainless Steel, Brushed Nickel and Matte Black.
19. Once the drain's components are positioned and the drain is level, lift the horizontal adjustment cup and all the assembled parts out of the drain base. Peel off the plastic release liner from the four pieces of double-sided tape. Then position the drain assembly back into the previously located position in the drain base, where the tape will adhere it.
20. To provide extra support for the tile and better subsurface drainage, place the low-profile tile support web on top of the drain base.
21. As a final step before installing mortar, tile or grout, remove the *Mapeguard Drain Grate* and snap the mortar guard into the grate holder. This will protect the plumbing until after the mortar, thin-set tile and grout are installed.
22. After tile installation and grouting are complete, remove the mortar guard and replace it with the selected *Mapeguard Drain Grate* by pressing it into position and attaching screws.

Drain installation with a sloped mortar bed

- Inspect the mortar bed before installing *Mapeguard Drain* to ensure that the substrate is acceptable for tile or stone installation. Refer to ANSI A108.01 General Requirements.
- Determine which installation method of dry-pack mortar bed will be used:
 - Direct-bond mortar bed (installed directly over concrete)
 - Floating or unbonded mortar bed
- 1. Floating or unbonded mortar beds are typically used when it is necessary to isolate a tile assembly from problematic floor conditions using a cleavage membrane ("slip sheet"). TCNA and TTMAC have a variety of application details regarding tile installations over mortar beds incorporating the use of a cleavage membrane. See the latest TCNA or TTMAC handbook for more information on floating mortar beds.

2. If the floating or unbonded mortar bed method is used, the following preparation steps need to be addressed before proceeding to the drain installation.
3. After installing the cleavage membrane and the lath, it is time to dry-fit the piping and the *Mapeguard Drain* before installing it.
4. Temporarily install a 2" (5 cm) PVC or ABS plastic riser into the P-trap. The pipe length should be above the subfloor. Mark the riser flush with the subfloor.
5. Remove the pipe, after marking it flush with the subfloor. Measure down 1-3/4" to 1-7/8" (4.4 to 4.8 cm) from the previous mark on the pipe, where the inner body of the drain body will sit on the substrate or mortar bed. Mark the new measurement and cut.
6. Always dry-fit pipes to the P-trap and drain before placing.
7. Connect the pipe.
8. Assemble the four foam spacers that are supplied with the drain, to help brace and level it during the installation process.
9. Connect the drain. Using the supplied foam spacers, dry-fit the cut pipe (riser) to the P-trap to be sure that the riser is correct in length. Use a torpedo level to verify that the *Mapeguard Drain* base is level in both directions.
10. For PVC plastic assemblies, apply a PVC primer to both ends of the PVC pipe, the P-trap hub and the drain base hub to receive the cement. Do not apply a primer to ABS plastic assemblies, as it would affect the integrity of the ABS plastic.
11. For PVC plastic assemblies, wait for the primer to dry.
12. Once primer is dry, apply a PVC- or ABS-specific cement to the hub of the P-trap, to both ends of the pipe and lastly to the hub of drain base.
13. Before connecting the *Mapeguard Drain* base, place a loose wet mix of mortar bed under the drain base to support the drain flange around the drain opening.
14. Immediately join the properly supported riser to the P-trap, followed by joining the drain base to the riser.
15. Permanently assemble the *Mapeguard Drain* base to the riser and all parts in a twisting motion while connecting the pipe to the hubs of the P-trap and drain base and while simultaneously pushing the drain base into the loose mud.
16. Be sure to use a torpedo level to verify that the drain base placement is level in both directions.
17. Next, it is time to assemble the drain using the *Mapeguard Drain* components. Apply the four supplied pieces of double-sided tape to the bottom of the flange of the horizontal adjustment cup. This removes the need for setting the drain in place with thin-set mortar. It also allows any subsurface water to freely flow from the weeping horizontal adjustment cup to the drain.
18. Once the horizontal adjustment cup is in place inside of the *Mapeguard Drain* base, position the drain grate holder on top of the threaded height adjuster and temporarily remove the mortar guard.
19. If necessary, use the supplied grate shim to level the grate holder before screwing it into place.
20. Screw the drain grate holder onto the threaded height adjuster.
21. Next, attach the *Mapeguard Drain Grate* (sold separately) to the drain grate holder for proper tile alignment. MAPEI offers the choice of three finishes: Polished Stainless Steel, Brushed Nickel and Matte Black.
22. Once the drain's components are positioned and the drain is level, lift the horizontal adjustment cup and all the assembled parts out of the drain base. Peel off the plastic release liner from the four pieces of double-sided tape. Then position the drain assembly back into the previously located position in the drain base, where the tape will adhere it.
23. To provide extra support for the tile and better subsurface drainage, place the low-profile tile support web on top of the drain base.
24. As a final step before installing mortar, tile or grout, remove the *Mapeguard Drain Grate* and snap the mortar guard into the grate holder. This will protect the plumbing until after the mortar bed and thin-set tile installation and grouting are completed.

25. After tile installation and grouting are complete, remove the mortar guard and replace it with the selected *Mapeguard Drain Grate* by pressing it into position and attaching screws.

INSTALLATION OF THE SLOPED MORTAR BED

Select the appropriate set of installation instructions below – for dry-pack mortar beds, for direct-bond mortar beds or for floating/unbonded mortar beds. Read all installation instructions thoroughly before installation.

Dry-pack mortar bed

1. Establish the pitch to the drain at 1/4" per foot (6 mm per 0.30 m) and mark the measurement on the perimeter walls.
2. Mix mortar to a "dry pack" consistency.

Direct-bond mortar bed (installed directly over concrete)

1. Apply a slurry bond coat made from a MAPEI polymer-modified mortar that meets ANSI A118.4, mixed with water to a creamy consistency, and then key it into the perimeter of the concrete substrate.
2. While the slurry bond coat is still wet, working in sections, place mortar around the perimeter of the shower floor.
3. Use a level, a metal straightedge or a straight piece of wood to compress the mud and create a perimeter mud screed with the mortar. Next, level it to match the measurement on the wall. Use a level to verify that the perimeter mud screed is level.
4. Continue to key slurry into the remainder of the substrate and, while it is still wet, spread a thin layer of mortar onto the floor. Work mortar with a wood or magnesium float into the slurry bond coat. Immediately follow with more mortar to the desired height, compacting and closing up the surface.
5. Fill the remainder of the shower pan with mixed mortar mud.
6. Compact and rake the mud with a wood or metal straightedge, working from the perimeter mud screed at the walls toward the drain. Using a straightedge is helpful to shave down the mortar and create a slope.
7. Finish the surface true and sloped toward the drain to the necessary tolerances.
8. Allow the mortar to dry.

Floating or unbonded mortar bed

1. Floating or unbonded mortar beds are typically used when it is necessary to isolate a tile assembly from problematic floor conditions using a cleavage membrane ("slip sheet"). TCNA and TTMAC have a variety of application details regarding tile installations over mortar beds incorporating the use of a cleavage membrane. See the latest TCNA or TTMAC handbook for more information on floating mortar beds.
2. Install the required cleavage membrane ("slip sheet") and galvanized wire mesh to prepare for the mortar bed application.
3. Establish the pitch to the drain at 1/4" per foot (6 mm per 0.30 m) and mark the measurement on the perimeter walls.
4. Mix mortar to a "dry pack" consistency.
5. Working in sections, place mortar around the perimeter of the shower floor.

6. Apply mortar into the wire mesh. The mesh must be either propped up before or during the application, so that the mesh is approximately in the middle of the mortar bed with at least 5/8" (16 mm) of mortar thickness covering the wire mesh.
7. Use a level, a metal straightedge or a straight piece of wood to compress the mud and create a perimeter mud screed with the mortar. Next, level it to match the measurement on the wall. Use a level to verify that the perimeter mud screed is level.
8. Fill the remainder of the shower pan with mixed mortar mud.
9. Compact and rake the mud with a wood or metal straightedge, working from the perimeter mud screed at the walls toward the drain. Using a straightedge is helpful to shave down the mortar and create a slope.
10. Work the mortar mixture with a wood or magnesium float to compact and close up the surface.
11. Finish the surface true and sloped to the necessary tolerances.
12. Allow the mortar to dry.

WATERPROOFING MEMBRANE APPLICATION FOR MORTAR BED

Liquid waterproofing

1. At changes of plane and connection to the drain's integrated bonding flange, use *Reinforcing Fabric* when using *Mapelastic® Turbo* [NA] or *Mapelastic AquaDefense*.
2. Apply the selected MAPEI waterproofing membrane and crack-isolation membrane to the mortar bed, placing fabric on top and applying more waterproofing on top of the fabric.
3. Once the perimeter corners have fabric reinforcement, mix and apply two coats of the selected liquid membrane onto the shower walls, floor and curb. Allow drying between coats.
4. When using *Mapelastic Turbo* [NA] or *Mapelastic AquaDefense*, it is necessary to use *Reinforcing Fabric* to waterproof the connection between *Mapeguard Drain* and the mortar bed.

Non-liquid waterproofing

1. When using *Mapeguard WP 200* sheet membrane for connection to the drain integrated bonding flange, begin by keying a MAPEI polymer-modified mortar into the substrate and drain body using the flat side of a 1/4" x 3/16" (6 x 4.5 mm) V-notch trowel.
2. Add additional mortar using the notched side of the trowel.
3. Apply *Mapeguard WP 200* to the mortar bed, embedding it into the mortar.
4. Using a rubber or wooden float, plastic taping knife or hand roller, move slowly to apply pressure and ensure proper embedding of the membrane.
5. Work from the middle to the outside edges to ensure that air is not trapped underneath the membrane.
6. Take care at the drain connection to work mortar toward the drain opening, in order to ensure complete coverage.
7. Use a hybrid sealant to seal the edge of *Mapeguard WP 200* at the drain connection.
8. Use *Mapeguard WP ST* seaming tape for seams and changes of planes.

FLOOD TESTING per ASTM D5957

Flood testing is recommended before the finished floor is installed, even if not required. Allow the waterproofing membrane system, seams, connections and materials to cure per the specified cure times of the selected MAPEI waterproofing product at detailed temperature and relative humidity conditions. Actual curing time depends

on the products used, air/substrate temperatures, substrate porosity, mortar bed's curing time and relative humidity. Expect shorter drying times in warmer conditions and longer drying times in cooler conditions.

TILE INSTALLATION

1. In accordance with the TCNA Handbook for Ceramic Tile Installation and with porcelain tile manufacturers, use a MAPEI polymer-modified mortar suitable for the tile being installed. The mortar should meet the ANSI A118.4, ANSI A118.11 or ANSI A118.15 standard, or be classified as ISO 13007 C2E, C2F or better.
2. For fast-track installations, use a rapid-setting MAPEI mortar.
3. Key the mortar into the surface of the substrate or waterproofing membrane, using the flat side of the trowel and ensuring that the mortar is embedded into the substrate.
4. Immediately apply additional mortar and comb over the substrate using the recommended notched trowel (and directional troweling method) suitable for the size and type of tile being installed.
5. Install the tile in accordance with industry guidelines, checking frequently for adequate mortar coverage.

GROUTING

Tiles may be grouted once the mortar has cured enough to allow light traffic, which will depend upon the mortar used, tile size, tile type and jobsite conditions. Select an appropriate MAPEI cement, ready-to-use or epoxy grout. Allow for longer drying time before grouting when installing large-format tiles (that is, tiles greater than 15" or 38 cm on one or more sides).

CLEANUP

Clean hands, tools and tile while the mortar is fresh, using water and soap. Never use steel wool, wire brushes, chlorine bleach, hydrochloric acid (muriatic acid), or any chlorine cleaners on stainless steel. Instead clean the polished and brushed stainless steel grates with a non-abrasive cleaner and a clean, soft, white cotton cloth.

PROTECTION

- Provide for dry, heated storage on site and deliver materials at least 24 hours before tilework begins.
- Substrate and ambient temperatures must be maintained at between 40°F and 95°F (4°C and 35°C) for at least 24 to 48 hours after the installation.
- Do not store *Mapeguard Drain* in direct sunlight.
- Note that cool, damp and humid conditions will slow the rate of evaporation and will cause mortar bed to retain a higher moisture content for a longer period of time.
- If the installation will be covered with a non-breathable membrane or if a moisture-sensitive stone is the finish, allow an extended period of curing before applying the membrane.
- Protect the installation from foot traffic and heavy traffic per Technical Data Sheets for the selected mortar and grout.

Shelf Life and Product Characteristics

Type of material	PVC (white) or ABS (black)
Storage	Store at between 40°F and 95°F (4° and 35°C) in a covered area (out of direct sunlight). Material should be kept in a cool dry place before application. Do not allow to freeze.
Shelf life	2 years when stored in a dry area in original shipping containers at 73°F (23°C) and 50% relative humidity

Packaging**

Description
Boxed kit: <i>Mapeguard Drain</i> , PVC base
Boxed kit: <i>Mapeguard Drain</i> , ABS base
Box: <i>Mapeguard Drain Grate</i> , Polished Stainless Steel finish
Box: <i>Mapeguard Drain Grate</i> , Brushed Nickel finish
Box: <i>Mapeguard Drain Grate</i> , Matte Black finish

** Mapeguard Drain Grate is sold separately from Mapeguard Drain. Mapeguard Drain Grate is 4" x 4" (10 x 10 cm) nominal and is made from finished #316 stamped stainless steel.

RELATED DOCUMENTS

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

*** At www.mapei.com

ADDITIONAL INFORMATION

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).

WARNING

The test results shown in the TECHNICAL DATA table were obtained in compliance with test methods and curing cycles, if applicable, defined in the industry standards referenced on the Technical Data Sheet. Please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement nor replace requirements per the TDS in effect at the time of the MAPEI product installation. For the most up-to-date TDS and warranty information, please visit our website at www.mapei.com. **ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.**

Before using, the user must determine the suitability of our products for the intended use, and the user alone assumes all risks and liability. **ANY CLAIM SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING TO US WITHIN FIFTEEN (15) DAYS FROM DATE IT WAS, OR REASONABLY SHOULD HAVE BEEN, DISCOVERED.**

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1-800-361-9309

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For the most current product data and BEST-BACKEDSM warranty information,
visit www.mapei.com.
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