

# Mapedrain 20

High-Strength, High-Flow, Prefabricated Drainage Composite



## DESCRIPTION

*Mapedrain*<sup>™</sup> 20 is a high-strength, three-dimensional drainage composite. It consists of a nonwoven filter fabric bonded to individual dimples of a molded polypropylene core, minimizing fabric intrusion into the drainage channels caused by overburden pressure. The filter fabric allows water to pass freely into the drainage core, which provides hydrostatic relief while preventing the passage of soil or sand particles that might clog the core.

## FEATURES AND BENEFITS

- Lightweight and easy to install, *Mapedrain 20* provides cost savings and eliminates the need for aggregate backfill.
- *Mapedrain 20* also serves as a protection course for MAPEI waterproofing membranes. Contact a MAPEI representative for specific guidelines.
- *Mapedrain 20* high-flow drainage provides up to three times the flow capacity of aggregate or sand.
- *Mapedrain 20*'s high compression strength withstands backfill pressure.
- *Mapedrain 20* channels water away from installed waterproofing systems.
- Native soils can be used over *Mapedrain 20*.
- Geotextile filter fabric ensures no-clog drainage by preventing intrusion of soil, concrete or construction grout into the flow channels.
- Unaffected by permanent immersion in water, bacteria, dilute acids and alkalis, *Mapedrain 20* will not deteriorate when exposed to these conditions.

- *Mapedrain 20* offers below-grade relief of hydrostatic pressure against foundation and retaining walls, when connected to a passive gravity drain or operational sump pump.
- The efficiency-oriented volume packaging of *Mapedrain 20* allows 7 rolls per pallet.
- The drain core is 40% post-industrial recycled polypropylene material.

## WHERE TO USE

- *Mapedrain 20* is designed for use in vertical and horizontal applications requiring single-sided subsurface drainage from a high-flow composite with high compressive strength.
- Use with *Mapedrain TD* drainage composite and related accessories.
- For below-grade vertical foundation structures, retaining walls and blindside applications
- For underground tunnels with earth-covered roofs
- For planters
- For applications under slabs, between split slabs and on plaza decks

## LIMITATIONS

- *Mapedrain 20* is not designed or intended to be used as a waterproofing membrane. Rather, it is an accessory for waterproofing systems.
- Do not leave *Mapedrain 20* permanently exposed to ultraviolet (UV) light.
- Backfill must be uniformly compacted in lifts and must consist of clean, compactible soil. If angular aggregate is desired, it must be 3/4" (19 mm) or less, and free of debris, sharp objects and stones larger than 3/4" (19 mm).

## SUITABLE SUBSTRATES AND SURFACE PREPARATION

- Before installation of *Mapedrain 20*, the substrate must be properly prepared or the waterproofing membrane completely installed, except in blindside waterproofing applications.
- **Horizontal:** Substrates may be concrete, earth, sand, pea gravel or crushed stone. Earth and sand substrates should be compacted. Crushed stone must be compacted, smooth and not larger than 3/4" (19 mm). Concrete should be solid and smooth without ridges, sharp corners or honeycombing. Any voids and aggregate pockets exceeding 1" (2.5 cm) in diameter or a depth greater than 3/4" (19 mm) should be filled with a non-shrinking cement-based grout. Concrete or subgrade should have a minimum slope of 2%.
- **Vertical (general):** Substrates may be concrete, shotcrete, wood lagging, steel sheet piling or secant piles. Substrates should be smooth and uniform without sharp protrusions or pockets. Fill tie-rod holes, honeycombs and voids with a non-shrinking cement-based grout. Grind all form fins, ridges and sharp corners, and remove excess concrete.
- **Wall lagging:** *Mapedrain 20* can be installed over wood lagging gaps up to 2-1/2" (6.3 cm) to provide a uniform surface for waterproofing membranes. Gaps larger than 2-1/2" (6.3 cm) should be completely filled with construction grout, wood or extruded polystyrene (at a minimum of 40 psi [0.28 MPa]). Do not use plywood or any other surface treatment that leaves voids in the lagging gaps.

## PRODUCT APPLICATION

*Mapedrain 20* prefabricated drainage composite panels can be installed against retaining walls, foundation walls (both waterproofed and non-waterproofed), lagging and landfills; under slabs; between split slabs; in planters; and on plaza decks and roof decks. *Mapedrain 20* can be cut to fit the application with a utility knife or scissors. Backfill, gravel, slurries, shotcrete or concrete may be placed directly onto either side of the *Mapedrain 20* panels. The panels are flexible enough to form around inside and outside corners.

For standard installation details, follow the *Mapedrain* detail drawings at [www.mapei.com](http://www.mapei.com). For non-standard installation instructions, contact a MAPEI representative.

### Attachment Methods for Waterproofing Systems

#### Attaching to walls that have adhered waterproofing membranes

*Mapedrain 20* should be attached using a *Mapebond*<sup>™</sup> contact adhesive, or an approved sealant or adhesive. Apply a *Mapebond* contact adhesive over the entire surface of the waterproofing membrane and to the back (plastic) side of *Mapedrain 20*. Allow the adhesive to dry and then apply *Mapedrain 20* to the membrane. *Mapedrain 20* will be permanently secured upon installation of backfill. Backfill should be placed as soon as possible and extended to about 4" to 6" (10 to 15 cm) above the termination edge of *Mapedrain 20*.

#### Attaching to soil retention systems for blindside applications

*Mapedrain 20* should be secured with fasteners compatible with the substrate (concrete, masonry, wood or soil) and 1" (2.5 cm) washers. Prevent concrete from flowing behind the *Mapedrain 20* core by sealing the back side of the panel joints with a strip of *Planiseal*<sup>®</sup> *Membrane SA* sheet membrane (or duct tape). Sealing the back side of the panel is not necessary if a *Mapeproof* waterproofing membrane is applied over *Mapedrain 20* before pouring concrete or applying shotcrete.

#### Attaching to walls with no waterproofing membrane

When *Mapedrain 20* is to be attached to walls that lack a waterproofing membrane, use a *Mapebond* contact adhesive, approved sealant or adhesive, or fasteners compatible with the substrate and 1" (2.5 cm) washers. *Mapedrain 20* will be permanently secured upon installation of backfill. Backfill should be placed as soon as possible and extend to about 4" to 6" (10 to 15 cm) above the termination edge of *Mapedrain 20*.

### Foundational Walls and Vertical Applications

#### 1. Installation in columns or rows

*Mapedrain 20* panels can be installed in columns or rows with the fabric side toward the soil. Each installation method is acceptable and has its advantages depending on the specific project conditions.

**In columns:** Start at the end of the wall and align the edge of *Mapedrain 20* with the corner. Install *Mapedrain 20* starting at the low point of the wall and attach the panel to the wall. Adjacent panels should be joined together with the lateral edge of the connecting panel placed over the flanged edge of the previous panel.

**In rows:** Place the longitudinal edge of the core against the wall so that it is flush with the wall footing and attach the panel to the wall. Attach subsequent panels in shingle fashion with fabric overlap at the bottom, placing the longitudinal edge of the upper panel over the flanged longitudinal edge of the lower panel and lap fabric from upper panel over lower panel.

#### 2. Mapedrain 20 laps

a. Overlap the flange of the plastic core from panel to panel and in shingle fashion to shed water, where water flow is a concern.

b. The fabric from the adjacent panels should overlap the preceding panel. The fabric can be adhered with a *Mapebond* contact adhesive, *Mapeflex*<sup>™</sup> *P1 FT*, *Mapeflex P2 NS* or *Planiseal Mastic*, or duct tape.

#### 3. Mapedrain 20 termination

a. Terminate *Mapedrain 20* about 4" to 6" (10 to 15 cm) below the finished grade.

- b. The termination edge of *Mapedrain 20* should be sealed by wrapping the filter fabric around to the back side of the panel. If there is insufficient fabric, cut and remove 3 to 4 rows of dimples from the core to provide excess fabric for wrapping behind the core. Wrapping the fabric around to the panel's back side prevents soil or construction debris from clogging the core.
  - c. Secure the fabric with a *Mapebond* contact adhesive, *Mapeflex P1 FT*, *Mapeflex P2 NS* or *Planiseal Mastic*, or duct tape.
4. Wall setback or ledge conditions, if present
- a. *Mapedrain 20* panels should be installed beginning at the bottom of the wall and ending at the ledge.
  - b. Subsequent courses of *Mapedrain 20* should be installed flat against the upper wall portion and placed so that 4" to 6" (10 to 15 cm) extend down and over the lower edge.
  - c. The overlapping *Mapedrain 20* sections will be pushed flush against the wall when the backfill is installed.
5. Foundation drainage collector/discharge system
- a. Place *Mapedrain TD* as required in design details. *Mapedrain TD* should be installed adjacent to *Mapedrain 20*. Care must be taken to ensure a continuous drainage path between *Mapedrain TD* and the *Mapedrain 20* panels.
  - b. Determine the locations for *Mapedrain TD* fittings (end outlet, side outlet, splice and corner). Cut *Mapedrain TD* to the proper length between fittings, allowing for extra length for insertion into fittings. Insert *Mapedrain TD* completely into fittings. Tape the fittings with duct tape.
  - c. Secure the fittings and *Mapedrain TD* accessories to the base of the wall with soil, a *Mapebond* contact adhesive, *Mapeflex P1 FT* or *Mapeflex P2 NS*. If no waterproofing was used, secure the fittings and *Mapedrain TD* with 1" (2.5 cm) washers and fasteners that are compatible with the substrate.
  - d. Connect the base fittings to 4" (10 cm) corrugated plastic drain pipe and run it to a sump pump or daylight. Special care should be taken to properly compact soil under the drain pipe to prevent settling of the drain pipe.
  - e. Backfill and compact the soil in lifts.
6. Collector pipe
- a. Install *Mapedrain 20* as specified in the installation instructions above.
  - b. Place the collector pipe as required in the design details.
  - c. Encapsulate the collector pipe in a gravel bed with a supplemental section of a filter fabric as a separator/filter.

## Horizontal Applications

### Under floor slabs and other concrete slabs

1. Install *Mapedrain 20* with the fabric side toward the soil.
2. Place the flange of the second and subsequent panels over the back side of the preceding dimpled core and butted as close as possible to the preceding panel.
3. The longitudinal and transverse panel joints of the *Mapedrain 20* core should be sealed with a strip of *Mapethene* sheet membrane or duct tape, except where a *Mapeproof* waterproofing membrane is installed on top of *Mapedrain 20*. This will aid in preventing concrete or soil from intruding into the *Mapedrain 20* core during subsequent construction phases.
4. Construction traffic should be minimized over the installed *Mapedrain 20*.
5. Sand, gravel and/or concrete may be poured directly over the *Mapedrain 20* core.

### Plaza decks/split slabs

1. Install *Mapedrain 20* with fabric side up over a properly waterproofed substrate. The panels should be placed so that water does not run against the overlap.
2. Secure *Mapedrain 20* to the waterproofing membrane with ballast or a *Mapebond* contact adhesive. The first panels should be placed with the flanged edge uphill.

- Place the flange of the second and subsequent panels over the flange of the preceding dimpled core and butted as close as possible to the preceding panel.
- Overlap the fabric of the second and subsequent panels over the flange of the preceding panel and secure.

### Planters

- Place *Mapedrain 20* in the planter so that the fabrics on the vertical and horizontal surfaces face the soil.
- Utilize the installation procedures and attachment method appropriate for the type of waterproofing that is used.
- Overlap the fabric of the vertical panel onto the horizontal panel at the transition point and secure.
- If cutting of a panel is required, the exposed cut must be covered with a supplemental piece of filter fabric to prevent soil intrusion. A minimum overlap of 6" (15 cm) onto the panel at each side of the cut will be required.

### Product Performance Properties

| Laboratory Tests   | Results  |
|--|--|
| <b>Core</b><br>Thickness – ASTM D1777<br>Compressive strength – ASTM D1621<br>Flow (hydraulic gradient = 1) – ASTM D4716                 | 0.40" (10.16 mm)<br>15,000 psf (718 kN/m <sup>2</sup> )<br>21 g/min/ft (260 L/min/m)   |
| <b>Fabric</b><br>Apparent opening size (AOS) – ASTM D4751<br>Grab tensile – ASTM D4632<br>CBR puncture – ASTM D6241<br>Flow – ASTM D4491 | 70 U.S. sieve (0.212 mm)<br>100 lbs. (0.45 kN)<br>250 lbs. (1.113 kN)<br>140 gal/min/ft <sup>2</sup> (5 704 L/min/m <sup>2</sup> ) |

### Storage

Protect product from UV light exposure. Store on a skid or pallet, and cover with polyethylene or tarp. Do not double-stack pallets.

### CSI Division Classification

|             |          |
|-------------|----------|
| Subdrainage | 33 46 00 |
|-------------|----------|

### Packaging and Coverage

Roll Sizes:

4 x 50 ft. (1.22 x 15.2 m), covering 200 sq. ft. (18.6 m<sup>2</sup>); packaged 7 rolls per pallet  
 6 x 50 ft. (1.83 x 15.2 m), covering 300 sq. ft. (27.9 m<sup>2</sup>); packaged 7 rolls per pallet

## 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](mailto:sustainability_USA@mapei.com) (USA) or [sustainability-durabilite@mapei.com](mailto:sustainability-durabilite@mapei.com) (Canada).

#### 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](http://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.**

## CONTACT INFORMATION

### MAPEI Headquarters of North America

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### Technical Services

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Flooring: 1-800-992-6273

Concrete and heavy construction: 1-888-365-0614

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1-800-361-9309

### Customer Service

1-800-42-MAPEI (1-800-426-2734)

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For the most current product data and BEST-BACKED<sup>SM</sup> warranty information,  
visit [www.mapei.com](http://www.mapei.com).

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