

# MAPEDRAIN® HS PLUS

## EXTRA-STRENGTH, HIGH-FLOW, DRAINAGE MAT WITH PROTECTIVE FILM

### PRODUCT DESCRIPTION

Mapedrain HS PLUS provides hydrostatic relief while preventing the passage of soil or sand particles which might clog the polypropylene core. Mapedrain HS PLUS includes a polymeric protective film on the back side to provide additional protection to waterproofing membranes. Mapedrain HS PLUS has additional compressive strength, and higher flow capacity, for critical applications.

### FEATURES AND BENEFITS

- Lightweight and easy to install, Mapedrain HS PLUS provides cost savings and eliminates the need for aggregate backfill.
- Mapedrain HS PLUS also serves as a protection course for Polyglass below grade and horizontal deck waterproofing membranes.
- Mapedrain HS PLUS's extra high compression strength withstands even higher backfill pressure.
- Mapedrain HS PLUS channels water away from installed waterproofing systems.
- Native soils can be used over Mapedrain HS PLUS.
- Geotextile filter fabric prevents intrusion of soil, concrete, or construction grouts into the flow channels.
- Unaffected by permanent immersion in water, bacteria, dilute acids and alkalis: Mapedrain HS PLUS will not deteriorate when exposed to these conditions.
- Mapedrain HS PLUS offers below-grade relief of hydrostatic pressure against foundation and retaining walls, when connected to a passive gravity drain or operational sump pump.
- The drain core is 40% post-industrial recycled polypropylene material.

### TECHNICAL DESCRIPTION

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

### STORAGE AND SHELF LIFE

12-month shelf-life If stored in its original packaging in a dry environment at a temperature between 40°F and 90°F (4°C and 32°C). Store Mapedrain HS PLUS off the ground and protected from moisture.

### LIMITATIONS

- Mapedrain HS PLUS is not designed or intended to be used as a waterproofing membrane. Rather, it is an accessory for waterproofing systems.
- Do not leave Mapedrain HS PLUS permanently exposed to ultraviolet (UV) light.
- Backfill must be uniformly compacted in 6–12" lifts and must consist of clean, compactible soil. If angular aggregate is desired, it must be ¾" (19 mm) or less, and free of debris, sharp objects and stones larger than ¾" (19 mm).



### PRODUCT DATA

Roll Size ..... 4' x 50' (1.22 m x 15.2 m)  
 Coverage ..... 200 ft<sup>2</sup> (18.6 m<sup>2</sup>)  
 Rolls/Pallet ..... 7

### WHERE TO USE

- Vertical foundation structures
- Retaining walls
- Horizontal underslab, split slabs, and plaza decks
- Pre-applied or blind-side applications

### PRODUCT CODES

- MDHSP450



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### SUITABLE SUBSTRATES AND SURFACE PREPARATION

- Before installation of Mapedrain HS PLUS, 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 ¾" (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 ¾" (19 mm) should be filled with a non-shrinking cement-based grout.
- *Vertical:* 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 HS PLUS can be installed over wood lagging gaps up to 2 ½" (6.3 cm) to provide a uniform surface for waterproofing membranes. Gaps larger than 2 ½" (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 INSTALLATION

Mapedrain HS PLUS prefabricated drainage composite panels can be installed against retaining walls, foundation walls (both waterproofed and non-waterproofed), lagging walls and under slabs; Mapedrain HS PLUS can be cut to fit the application with a utility knife or scissors. The panels are flexible enough to form around inside and outside corners. Mapedrain HS PLUS eliminates the need for a protection course over Polyglass waterproofing systems.

For standard installation details, follow the applicable Polyglass detail drawings at [www.polyglass.us](http://www.polyglass.us). For non-standard installation instructions, contact a Polyglass Technical Service Representative.

### ATTACHMENT METHODS FOR WATERPROOFING SYSTEMS

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

- Mapedrain HS PLUS should be attached using a Polyglass approved contact adhesive. Apply approved contact adhesive to the surface of the waterproofing membrane and to the back (plastic) side of Mapedrain HS PLUS as needed prior to 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 HS PLUS.

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

- Mapedrain HS PLUS 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 HS PLUS core by sealing the back side of the panel joints with a strip of Mapethene™ LT60 or HT60 sheet membrane (or duct tape). Sealing the back side of the panel is not necessary if a Mapeproof™ AL PRO waterproofing membrane is applied over Mapedrain HS PLUS before pouring concrete or applying shotcrete.

#### Attaching to walls with no waterproofing membrane

- When Mapedrain HS PLUS is to be attached to walls that lack a waterproofing membrane, use an approved contact adhesive or fasteners compatible with the substrate and 1" (2.5 cm) washers. Mapedrain HS PLUS 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 HS PLUS.

### HORIZONTAL APPLICATIONS

#### Under slab applications

- Install Mapedrain HS PLUS with the fabric side toward the soil.
- 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.
- The longitudinal and transverse panel joints of the Mapedrain HS PLUS core should be sealed with a strip of Mapethene sheet membrane or duct tape, except where a Mapeproof AL PRO waterproofing membrane is installed on top of Mapedrain HS PLUS. This will aid in preventing concrete or soil from intruding into the Mapedrain HS PLUS core during subsequent construction phases.
- Construction traffic should be minimized over the installed Mapedrain HS PLUS.
- Sand, gravel and/or concrete may be poured directly over the Mapedrain HS PLUS core.

#### Plaza decks/split slabs

- Install Mapedrain HS PLUS with fabric side up over a properly waterproofed substrate. The panels should be placed so that water does not run against the overlap.
- Secure Mapedrain HS PLUS to the waterproofing membrane with ballast or an approved contact adhesive. The first panels should be placed with the flanged edge uphill.



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- 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 HS PLUS in the planter so that the fabric is 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.

### FOUNDATIONAL WALLS AND VERTICAL APPLICATIONS

#### Installation in columns or rows

- Mapedrain HS PLUS 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 HS PLUS with the corner. Install Mapedrain HS PLUS 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.

#### Mapedrain HS PLUS laps

- Overlap the flange of the plastic core from panel to panel and in shingle fashion to shed water, where water flow is a concern.
- The fabric from the adjacent panels should overlap the preceding panel. The fabric can be adhered with an approved contact adhesive or duct tape.

#### Mapedrain HS PLUS termination

- Terminate Mapedrain HS PLUS about 4" to 6" (10 to 15 cm) below the finished grade.

- The termination edge of Mapedrain HS PLUS 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.
- Secure the fabric with an approved contact adhesive.

#### Wall setback or ledge conditions, if present

- Mapedrain HS PLUS panels should be installed beginning at the bottom of the wall and ending at the ledge.
- Subsequent courses of Mapedrain HS PLUS 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.
- The overlapping Mapedrain HS PLUS sections will be pushed flush against the wall when the backfill is installed.

#### Foundation drainage collector/discharge system

- At the bottom termination of Mapedrain HS PLUS extend it out from the structure so that it is positioned under the proposed location of the collector pipe.
- Place the collector pipe as required in the design details.
- Encapsulate the collector pipe in a gravel bed with a supplemental section of a filter fabric as a separator/filter.

### CORPORATE HEADQUARTERS

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