MAPEPROOF™ HW

BENTONITE GEOTEXTILE SHEET WATERPROOFING MEMBRANE

PRODUCT DESCRIPTION

Mapeproof HW waterproofing membrane is composed of sodium bentonite encapsulated between a woven and nonwoven polypropylene geotextile fabrics. The nonwoven fabric is needle-punched through to the woven fabric, mechanically locking the sodium bentonite clay in place with thousands of fibers. In the presence of water, the sodium bentonite hydrates and swells forming a monolithic waterproofing membrane. Ideal for horizontal slabs, vertical blindside, and backfilled walls applications.

FEATURES AND BENEFITS

- High swelling index helps prevent water intrusion
- Can be installed over damp or green concrete
- Self-healing if punctured
- Not affected by rises and falls in the water table

SYSTEM COMPONENTS

- Mapeproof SW
- Mapestrip 25 or B25
- Mapeproof Sealant
- Mapeproof Granules
- Mapedrain HS

TECHNICAL DESCRIPTION

Property	Test Method	Typical Result
Thickness	ASTM D5199	0.25" (6 mm)
Mass per unit area, nonwoven polypropylene cap	ASTM D5261	5.9 U.S. oz. per sq. yd. (200 g per m^2)
Mass per unit area, woven polypropylene carrier	ASTM D5261	3.2 U.S. oz. per sq. yd. (110 g per m^2)
Mass per unit area, bentonite at 12% moisture	ASTM D5993	1.13 lbs. per ft^2 (5.5 kg per m^2)
Mass per unit area, bentonite at 0% moisture	ASTM D5993	1 lb. per ft^2 (4.9 kg per m^2)
Hydraulic conductivity	ASTM D5887	2×10^{-9} cm/sec
Swell index	ASTM D5890	> 27 mL per 2 g
Index flux	ASTM D5887	4×10^{-9} $m^3/m^2/s$ max
Tensile strength	ASTM D6768	63 lbf/ft. (11 kN/m) - MD 63 lbf/ft. (11 kN/m) - XMD
Grab tensile strength	ASTM D4632	135 lbf (600 N)
Static puncture strength	ASTM D6241	450 lbf (2 kN)
Peel strength (MD^2)	ASTM D6496	3.6 lbf/in. (625 N/m)
Peel adhesion to concrete	ASTM D903	17.7 lbf/in. (3.1 kN/m)
Hydrostatic pressure resistance	ASTM D5385	231 ft (70.4 m)

STORAGE AND SHELF LIFE

60 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). Prevent hydration of bentonite until the sheet is installed and under recommended compaction.

PRODUCT DATA

Roll Size ..... 3'7" × 16'5" (1.1 m × 5 m)
Coverage ..... 59.2 ft^2 (5.5 m^2)
Weight per roll ..... 80.6 lb (36.6 kg)
Rolls/Pallet..... 20

APPROVALS & CERTIFICATIONS

- City of Los Angeles Research Report RR 26113
  - Waterproofing

WHERE TO USE

- Horizontal or vertical
- Backfilled walls
- Underslab applications
- Blindside walls

PRODUCT CODES

- MPHW416

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LIMITATIONS

- Do not install over substrates containing asbestos.
- Mapeproof HW is for below-grade applications only.
- Mapeproof HW is not to be installed over ponding or standing water, snow or ice.
- Mapeproof HW should only be installed with properly prepared substrates.
- Not designed for above-grade split-slab or plaza deck applications.
- Mapeproof HW is designed for use under reinforced concrete slabs at least 4" (10 cm) thick over a compacted gravel base. If Mapeproof HW is installed over a mud slab, the reinforced concrete slab must be at least 5" (12.5 cm) thick. A structural engineer should be consulted to determine the appropriate thickness of the reinforced concrete slab, based on the hydrostatic conditions that exist at a specific project site.
- Contact Polyglass Technical Services for application over void forms.

SUITABLE SUBSTRATES AND SURFACE PREPARATION

- Before installation of Mapeproof HW, the substrate must be properly prepared.
- *Underslab:* Substrates may be concrete, earth, sand, pea gravel or crushed stone. Earth and sand substrates should be compacted to a minimum 85% Modified Proctor density and covered with Mapedrain HS. Crushed stone should 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-shrink cementitious grout. Complete all required work on elevator pits, sump pits, grade beams and pilings before installing Mapeproof HW under a main slab area.

Other Considerations

- Where hydrostatic conditions exist, install Mapeproof HW under footings, grade beams and slabs.
- For conditions of contaminated site water, as determined by Polyglass-analyzed water samples, Mapeproof SW should be used instead. Where groundwater is present, 0.53 U.S. gal. (2 L) of groundwater will be needed for analysis. Contact Polyglass Technical Services Department for instructions.
- Mapestrip™ 25 or Mapestrip 25B waterstop must be installed in all horizontal and vertical construction joints.
- Backfill must be uniformly compacted to a minimum 85% density per the Modified Proctor Test on each lift 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).
- *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-shrink cementitious grout to provide a smooth surface. Grind form fins, ridges and sharp corners, and remove excess concrete.
- *Wall lagging:* Install Mapedrain panels over wood lagging. Mapedrain panels can be installed over wood lagging gaps up to 2½" (6.3 cm) to provide a uniform surface for Mapeproof HW. Gaps larger than 2½" (6.3 cm) should be completely filled with cementitious grout, wood or extruded polystyrene (at a minimum of 40 psi [0.28 MPa]) even if Mapedrain panels are installed before Mapeproof HW. Do not use plywood or other surface treatment that leaves voids in the lagging gaps.

PRODUCT INSTALLATION

HORIZONTAL INSTALLATION

Under Concrete Slabs

- Place Mapeproof HW over properly prepared substrate with the white, nonwoven geotextile side up (facing the concrete pour) and the black, woven geotextile side down (facing the substrate).
- Overlap all adjoining edges for at least 4" (10 cm) and stagger sheet ends by at least 12" (30 cm).
- Staple or nail laps together as required to prevent any displacement before and during concrete placement. Mapeproof Granules also may be placed in the seams for additional waterproofing performance.
- When the slab is poured in sections, Mapeproof HW should extend for at least 12" (30 cm) beyond the slab edge or rebar. Install Mapestrip 25 or Mapestrip 25B in all concrete construction joints.
- When the installation reaches the outer edge of the slab, continue Mapeproof HW up and out of the form for at least 12" (30 cm).
- At the corner, Mapeproof HW should remain in contact with the substrate and inside the surface of the concrete form.
- After the forms are removed, Mapeproof HW on the outside of the form should be positioned and fastened onto the footing or vertical wall.
- Overlay Mapeproof HW for at least 12" (30 cm), with the succeeding vertical waterproofing membrane at the horizontal/vertical transition.
- At property-line retaining walls, such as soldier piles or lagging, continue the under-slab Mapeproof HW application up the retaining wall for at least 12" (30 cm) above the top edge of the slab/footing and secure Mapeproof HW to the substrate.

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- Overlap the vertical Mapeproof HW waterproofing membrane by at least 6" (15 cm), or at least 12" (30 cm) under hydrostatic head conditions.

Underslab Penetrations and Pile Caps

- Cut Mapeproof HW to closely fit around penetrations and pile caps.
- Install Mapeproof Granules at least 3" (7.5 cm) in width under the cut edge of Mapeproof HW.
- Apply a fillet of Mapeproof Sealant at least ¾" (19 mm) thick to the top cut edge of Mapeproof HW at penetrations, pile caps, grade beams and other detailing. Extend at least 3" (7.5 cm) of Mapeproof Sealant onto Mapeproof HW and at least 1½" (3.8 cm) of Mapeproof Sealant onto penetrations.
- Install target sheets of Mapeproof HW, cut tight to the penetrations.
- Seal all cut edges of Mapeproof HW with Mapeproof Sealant.
- Complete detailing by wrapping Mapestrip 25 or Mapestrip 25B around the penetrations.
- For hydrostatic conditions, Mapeproof HW should be installed under grade beams and footings using Mapeproof Sealant per the previous installation step.
- Extend Mapeproof HW onto footings for at least 6" (15 cm) when required to tie into vertical wall waterproofing.

VERTICAL INSTALLATION

Backfilled Cast-In-Place Concrete Walls

- Starting at the base of the foundation wall where it meets the footing, install Mapeproof HW horizontally, extending out onto the footing for at least 12" (30 cm).
- Fasten Mapeproof HW in place with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1". (2.5 cm) washers.
- Install adjacent rolls of Mapeproof HW by overlapping previous rolls by at least 4" (10 cm).
- After a bottom horizontal course, Mapeproof HW sheets can be installed either vertically or horizontally oriented.
- Stagger all end laps at least 12". (30 cm).
- Install Mapeproof HW sheets in shingle fashion, so that the upper roll overlaps the lower roll.
- Fasten membrane laps 18". (46 cm) on center, or as required to prevent blousing in.
- At the grade line, terminate Mapeproof HW from 4" to 6" (10 to 15 cm) below the finished grade elevation.
- Install Mapeproof Sealant 2" (5 cm) wide by ¼" (6 mm) thick on the wall.
- Install a rigid termination bar with appropriate fasteners a minimum of 12" (30.5 cm) on center.
- Install backfill. Backfill must be uniformly compacted to a minimum 85% Modified Proctor density on each lift 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).

Property Line / Lagging Walls

- Mapeproof HW should be installed with the white, non-woven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Starting at the base corner, install the first course of Mapeproof HW (horizontally oriented) on the lagging wall, tying into underslab waterproofing if present.
- Secure sheet edges to the shoring wall using fasteners compatible with the substrate and 1" (2.5 cm) washers no more than 24" (61 cm) on center.
- After a bottom horizontal course, Mapeproof HW sheets can be installed either vertically or horizontally oriented.
- Continue Mapeproof HW installation up the wall to the finished grade elevation, overlapping adjacent Mapeproof HW sheet edges by at least 4" (10 cm) and staggering all sheet roll ends of adjacent panels by at least 12" (30 cm). Do not allow the Mapeproof HW overlap joints to run at same elevation as the concrete-pour lift joints; rather, extend Mapeproof HW past the concrete pour joints by at least 6" (15 cm).
- At tie-back heads, field-fabricate a metal tie-back cover of the appropriate size to fit over the tie-back plate and allow proper cast-in-place concrete coverage per project requirements.
- The field-fabricated metal tie-back cover should fit over the entire tie-back head without the tie-back plate or cables coming into direct contact with the field-fabricated metal tie-back cover.
- Before installing field-fabricated metal tie-back covers, fill voids in the retention-wall substrate and in the tie-back head assembly with spray foam (at a minimum of 20 psi) or a non-shrink grout.
- Fill field-fabricated metal tie-back covers with a 50/50 mix of Mapeproof Sealant and Mapeproof Granules, fastening them to the soil-retention wall by using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Install Mapeproof HW over Mapedrain HS and the field-fabricated metal tie-back cover.

DETAILING

Wall / Footing Transitions

- Before installing the first course of Mapeproof HW, place Mapeproof Granules at the wall/footing transition corner.
- Create a cant at all vertical-to-horizontal transitions by applying a Mapeproof Granules or Mapeproof Sealant cant measuring 1½" to 2" (3.8 to 5 cm) along that junction.
- Mechanically fasten Mapeproof HW, ensuring that the membrane is tight to the corners to prevent bridging.
- Secure Mapeproof HW in place with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.

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Footing Corners

- Before installing the first course of Mapeproof HW, place Mapeproof Granules at the wall/footing transition corner.
- Create a cant at all vertical-to-horizontal transitions by applying a Mapeproof Granules or Mapeproof Sealant cant measuring 1½" to 2" (3.8 to 5 cm) along that junction.
- At the bottom corner of the wall, install Mapeproof HW horizontally oriented with 5' (1.52 m) of product on one wall, wrapping the remaining 2' (0.6 m) around the corner on the other wall surface.
- Cut the bottom edge of Mapeproof HW at the corner of the wall a minimum of 12" (30 cm) so that Mapeproof HW can be extended on top of the footing.
- Fasten Mapeproof HW into position, a maximum of 24" (61 cm) on center.
- Cut and install a section of Mapeproof HW over the uncovered footing corner area.
- Apply Mapeproof Sealant on top of the Mapeproof HW overlap at the corner.

Wall Inside Corners

- Before installing Mapeproof HW at inside wall corners, apply a continuous Mapeproof Sealant fillet measuring ¾" (19 mm) thick directly in the corner before installing Mapeproof HW.
- Mechanically fasten Mapeproof HW, ensuring that membrane is tight to the corners to prevent bridging.
- Secure Mapeproof HW into place with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Detail all Mapeproof HW cut edges with Mapeproof Sealant.

Wall Outside Corners

- Before installing Mapeproof HW at outside wall corners, install a 12" (30 cm) detail strip of Mapeproof HW and secure into place using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Mechanically fasten Mapeproof HW, ensuring that membrane is tight to the corners to prevent bridging.
- Secure Mapeproof HW into place with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Detail all Mapeproof HW cut edges with Mapeproof Sealant.

Penetrations

- Install Mapeproof HW target sheets, cut tight to the penetrations.
- Apply a Mapeproof Sealant fillet at least ¾" (1.9 cm) thick around penetrations, extending Mapeproof Sealant onto the penetrations 1½" (3.9 cm) and onto the membrane 3" (7.6 cm).
- Cut Mapeproof HW to closely fit around penetrations and install over penetrations with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Detail all Mapeproof HW cut edges with Mapeproof Sealant.

Multiple Penetrations

- In areas where multiple penetrations are close together, it may be impractical to cut Mapeproof HW to fit around each penetration. Note that penetrations should have a minimum space of 6" (15 cm) between each penetration.
- Apply a Mapeproof Sealant fillet at least ¾" (19 mm) thick around penetrations, extending onto penetrations by 1½" (3.8 cm).
- Apply Mapeproof Sealant ¼" (6 mm) thick onto the substrate between penetrations and extending out away from penetrations by 3" (7.5 cm).
- Cut Mapeproof HW to closely fit around penetrations and install over penetrations with the white, nonwoven side facing out, using fasteners compatible with the substrate and 1" (2.5 cm) washers.
- Detail all Mapeproof HW cut edges with Mapeproof Sealant.

DETAIL REQUIREMENTS

For standard installation details, follow the Mapeproof HW detail drawings. For non-standard installation instructions, contact your local Polyglass Technical Service representative.

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Product Disclaimer:

For professional use only.

Unless otherwise incorporated into or part of a supplemental manufacturer's warranty, Polyglass warrants its product(s) against manufacturing defects in its product that directly results in leakage for a period of 1 year. Refer to safety data sheet (SDS) for specific data and handling of our products. All data furnished refers to standard production and is given in good faith within the applicable manufacturing and testing tolerances. Polyglass U.S.A., Inc., reserves the right to improve and change its products at any time without prior notice. Polyglass U.S.A., Inc. cannot be held responsible for the use of its products under conditions beyond its own control. For most current product data, detail drawings and warranty information, visit www.polyglass.us

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