Polyproof Ultra FB

Method Statement

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Index

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1. Products and System description

1.1. System description

Polyproof Ultra FB is a cold-applied, multi-component, fully-bonded HDPE based waterproofing membrane system, with pre-applied application for horizontal surfaces and shoring walls and post-applied for retaining walls.

Polyproof Ultra FB system is designed to be installed prior pouring the structural concrete (where retaining walls aren't present), which is then poured directly onto the Polyproof Ultra FB system, providing a seamless integrated chemical and mechanical bond with the freshly poured concrete, effectively becoming an integral part of its structure.

In case of the presence of retaining walls, the system is post-applied and self-adheres directly onto the cast concrete.

1.2. Areas of application

Polyproof Ultra FB system is designed for the following underground structures:

- Basements
- Below rafts
- Retaining walls
- Infrastructural applications (tunnels and bridges)

1.3. System components

The Polyproof Ultra FB system comprises of the six following products:

1. Polyproof Ultra Plus– sanded membrane
2. Polyproof Ultra – plain membrane
3. Polyproof Ultra TSD - double sided tape
4. Polyproof Ultra TS – single sided plain tape
5. Polyproof Ultra Plus TS – single sided sanded tape
6. Polyproof EPU – hybrid polyurethane coating

1.3.1. System components supply

	Thickness (mm)	Length (m)	Width (mm)	Weight (kg)	Volume (L)
Polyproof Ultra	1.2	20	1500	42	-
Polyproof Ultra Plus	1.2	20	1500	55	-
Polyproof Ultra TSD	0.6	20	100	1.6	-
Polyproof Ultra TS	0.35	30	100	1.4	-
Polyproof Ultra Plus TS	0.6	30	100	2.8	-
Polyproof EPU	-	-	-	2.48	2

1.3.2. Product details

a) Polyproof Ultra Plus

Polyproof Ultra Plus is a fully-bonded, pre-applied, high performance, HDPE based waterproofing membrane with a reactive inorganic fine granular finish. The membrane is designed to form a chemical and mechanical bond with the freshly poured concrete, effectively becoming an integral part of the structure.

b) Polyproof Ultra

Polyproof Ultra is a self-adhesive, post-applied high-performance HDPE based waterproofing membrane with plain finish and release liner for easy installation.

c) Polyproof Ultra TSD

Polyproof Ultra TSD is a double-sided, self-adhesive HDPE tape, protected with a release liner to be used in conjunction with the Polyproof Ultra FB system. The carrier is coated with a pressure sensitive adhesive on both sides with excellent adhesion to the Polyproof Ultra Plus membrane.

d) Polyproof Ultra TS

Polyproof Ultra TS is a single-sided plain finish self-adhesive tape, protected with a release liner to be used in conjunction with the Polyproof Ultra FB system. The carrier is coated with a pressure sensitive adhesive on one side with excellent adhesion to the Polyproof Ultra membrane.

e) Polyproof Ultra Plus TS

Polyproof Ultra Plus TS is single-sided, self-adhesive tape with sanded finish to be used in conjunction with the Polyproof Ultra FB system. The carrier is coated with a pressure sensitive adhesive with excellent adhesion to the Polyproof Ultra Plus membrane.

f) Polyproof EPU

Polyproof EPU is a cold-applied, elastomeric, two-component hybrid polyurethane-based sealing compound designed for detailing and repairing the Polyproof Ultra FB system and for filling imperfections on concrete surfaces.

2. Required installation tools/equipment

For the installation of Polyproof Ultra FB the following tools/equipment is required:

1) Scrapper
2) Lap roller
3) Hot air gun
4) Measuring tape
5) Utility knife
6) Trowel
7) Paddle mixer

3. Safety instructions

For the installation of Polyproof Ultra FB, there isn't specific safety equipment requirement, however, personal protection equipment is mandatory in any construction site.

- PPE should be worn at all times (safety shoes gloves, etc);
- Suitable eye protection should be worn at all times, specially while handling products in liquid form;
- If any product gets in contact with skin or eyes, rinse with fresh water immediately and seek medical advice;
- In case of accidentally any product is swollen, call medical assistance immediately;

4. System installation

4.1. Substrate preparation

For the application of Polyproof Ultra FB it must be ensured that the substrate is stable to avoid any type of movement during its application and pouring of concrete.
Additionally, in case the substrate isn't in optimal conditions, the following must be followed:

- Clean the substrate from any debris, such as oil and/or dust;
- All surface imperfections, protrusions, structurally unsound and friable concrete must be removed and repaired with a suitable concrete repair mortar from the Polycrete range (depending on the size of the damage);
- The substrate can be slightly damp, however, any ponding water must be removed prior the installation of Polyproof Ultra FB;

4.2. Polyproof Ultra Plus installation

4.2.1. Horizontal surfaces

1. Begin installation from closer to project peripheries by placing Polyproof Ultra Plus with the adhesive side finish facing up towards the concrete pour. The membrane is applied in a loosely laid manner, having a 100mm side selvedge that self-adheres to following membrane sheets. Leave the release liners on until the overlapping process is concluded;

2. Place following Polyproof Ultra Plus sheets as per application step 1. in a staggered manner, overlapping with the previous membrane sheet at the same width of the selvedge and aligning the side and end overlaps;

4.2.2. Vertical surfaces

1. Mechanically fix Polyproof Ultra Plus membrane on the vertical height (e.g. with a wooden batten) with the adhesive side finish facing up towards the concrete pour. Align and fix subsequent sheets using the same method and secure all overlaps;

2. During the vertical extensions of the membrane and after the removal of the batten, cut any damaged portion of the membrane and allow sufficient overlapping margins before continuing with the mechanical fixtures on the next level.

4.2.3. Corners

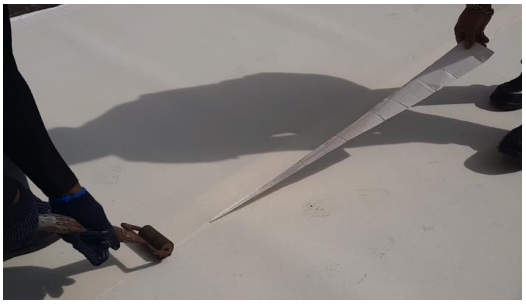
1. With a utility knife, cut Polyproof Ultra Plus to the required size of the corner;
2. Remove the sand from Polyproof Ultra Plus membrane with a scrapper and a hot air gun along the overlap width(100mm)

3. Apply one layer of Polyproof Ultra TSD tape and form the corner;

4. With a scrapper, apply Polyproof EPU sealing compound on the overlaps to fully seal them

4.2.4. Side Overlaps

1. For side overlaps, remove the release liner in the selvage, and using a lap iron roller apply extra pressure to secure overlaps to ensure full adhesion to bottom membrane sheet.



4.2.5. End Overlaps

1. Remove the granular finish at a width of 100mm with a scraper and hot air gun

2. Apply Polyproof Ultra TSD (double-sided tape), by removing the release liner at the bottom side

3. Remove the release liner at the top of the Polyproof Ultra TSD tape onto the exposed membrane;

4. Press the overlapping membrane sheet firmly before applying additional pressure with a roller to ensure a tight seal over the end overlaps.

4.2.6. Horizontal to Vertical Overlaps

1. Vertical and horizontal sheets of Polyproof Ultra Plus must overlap with minimum width of 200mm;
2. Remove the sanded finish from the Polyproof Ultra Plus horizontal sheet with a scrapper and a hot air gun along the overlap width (200mm);

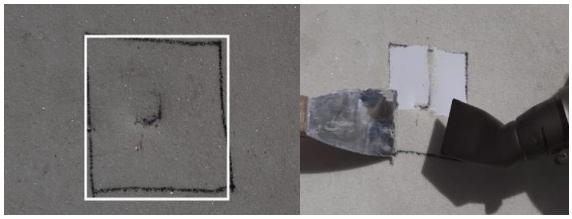
3. Apply two layers of Polyproof Ultra TSD double-sided tape side by side;

4. Overlap the horizonal sheet with the vertical membrane sheet and form the end overlap by pressing firmly. Apply extra pressure with a roller;

5. Place tape on both sides of the overlap and seal the overlap with Polyproof EPU sealing compound using a scrapper;

4.2.7. Repair of Polyproof Ultra Plus membrane

1. Mark the area in the Polyproof Ultra Plus membrane that requires to be repaired and with a scrapper and a hot air gun, remove the sand finish from the Polyproof Ultra Plus membrane in the area that needs to be repaired;



2. Cut a piece of Polyproof Ultra Plus TS tape to cover the area to be repaired marked in step 1.

3. Place the tape repair piece from step 3. by peeling off the release liner and seal around with Polyproof EPU sealing compound

4.3. Pipe penetrations

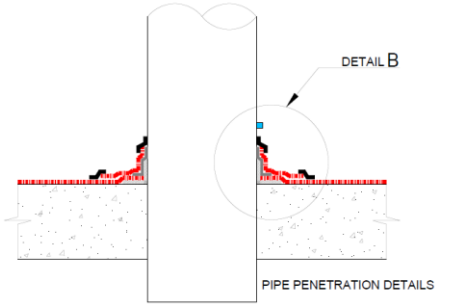
1. Apply Polyproof Ultra TSD around the pipe;

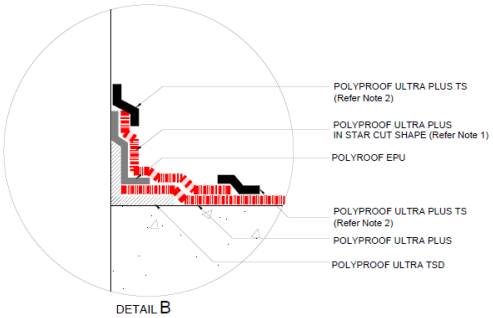
2. Cut a hole on the Polyproof Ultra Plus to the size of the pipe diameter. Insert through the pipe and firmly fix it with the previously installed double-sided tape using steel roller;

3. Apply Polyproof EPU on Polyproof Ultra Plus around the pipe;

4. Apply a second layer of Polyproof Ultra Plus by cutting it in a star shape form, onto Polyproof EPU whilst still uncured;

5. Measure 50 mm to the right and left of the intersection line between the first and second layers, then remove the sand from this section (i.e., 100 mm overall) and seal it firmly with an additional layer of Polyproof Ultra Plus TS to form a picture frame-like shape around the pipe.





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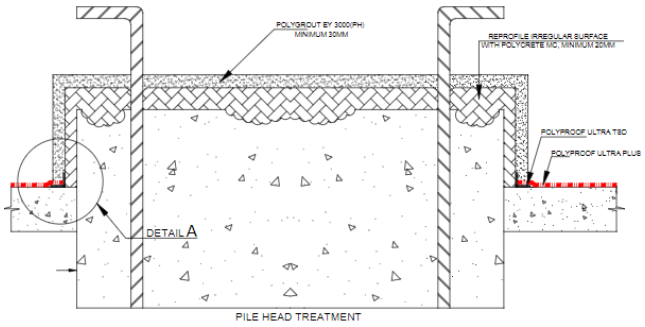
4.4. Pile Heads

1. Reprofile the pile head using Polycrete MC;
2. Apply Polyproof Ultra TSD double-sided tape;
3. Cut a hole on the Polyproof Ultra Plus to the size of the pile diameter. Insert through the pile and firmly fix it with the previously installed double-sided tape using a steel roller;
4. Encapsulate with Polygrout EY 3000 (PH) with minimum width of 30mm around the pile head;



4.5. Retaining Walls

4.5.1. Option 1: Polyproof Ultra

The Polyproof Ultra membrane application area is limited to retaining walls with sufficient space available for Installation, especially for post applied scenario. Side and end overlaps shall be a minimum of 100mm. Below is the step-by-step application:

1. Measure and cut the Polyproof Ultra membrane to the required length;

2. Peel off the release film from the self-adhesive side of the Polyproof Ultra membrane and press it to the surface of the retaining wall. Smoothen the membrane from the center to the edges with a sponge surface float to remove any entrapped air;

4.5.1.2. Detailing: Corners

1. With a utility knife, cut Polyproof Ultra with a strip of a minimum width of 200mm;
2. With an iron roller, fold the strip to a 90° angle;

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3. Overlap the membrane to the corner strip and seal the edges with Polyproof Ultra TS tape

4.5.1.3. Repair of the Polyproof Ultra membrane

In the event of damage occurring on the membrane surface due to site activities, it is advisable to repair the affected area by using a patch of the same membrane followed by sealing of all edges using Polyproof Ultra TS. The patch should extend at least 100mm beyond all sides of the puncture.

4.5.2. Option 2: Bitustick XL and Bitustick R400

In the eventual case of an open cut excavation and the vertical side of waterproofing membranes are to be applied directly on to the retaining wall after being casted, apply Polyprime SB primer on the retaining wall and allow to dry, followed by the application of 1st layer of waterproofing membrane (Bitustick XL), fully bonded onto the surface, including secured sealing of side and end overlaps.

1st Layer: Bitustick XL

1. Apply the 1st layer of Bitustick XL directly on the primed substrate with minimum 150mm overlap on pre-applied Polyproof Ultra Plus membrane.

2. Install the membrane in vertical direction preferably till the top of the ground level, so that unnecessary joints are avoided which tend to be the weak spots for water leakage.

2nd Layer: Bitustick R400

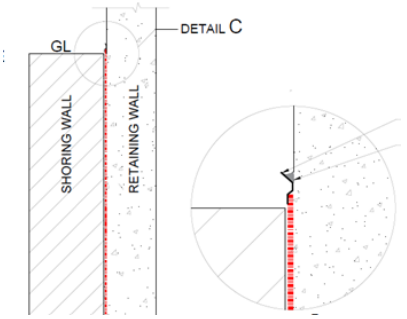
1. The installed Bitustick XL waterproofing membrane is now to be protected with a self-adhesive protection membrane Bitustick R400, which not only will protect the previous layers, but also acts as a second layer of waterproofing to the system.
2. The 2nd layer Bitustick R400 shall be placed at 50% staggered overlaps over the 1st layer.

Termination of bitumen Membranes

The membrane system will be terminated at the ground level by aluminum flashing method top by tucking into a groove in the concrete and shall be sealed with a suitable mastic sealant, such as Bitumastic in case of underground termination or Polyseal PS in case of above ground termination. Additionally, the joint between pre-applied and post-applied membrane is to be sealed with Polyproof EPU sealing compound (please refer the typical drawings).

4.6. Membrane termination

Both Polyproof Ultra Plus and Polyproof Ultra membranes must be terminated.
Edges at the ground level/below ground level are to be terminated using the aluminum flashing method and are to be sealed with the Polyseal 1PU sealant.



4.7. Pre & Post applied membrane joineries

When the sanded and non-sanded membranes are to be overlapped (connection between pre and post-applied membranes), it is recommended to overlap the Polyproof Ultra membrane on the plain surface of Polyproof Ultra Plus by a minimum of 200mm. The joints are to be further sealed with Polyproof Ultra TS tape.

4.8. Construction & Expansion Joints

As part of the system, appropriate waterstops from the **Polystop ICJ & IEJ** are to be installed for construction and expansion joints in the structure. For more details on the appropriate joints to be selected, please contact the Henkel Polybit Technical team. Other than Polystop for the construction and/or kicker joints, fix a layer of **Hydroseal P** swellable water bar and **Polyinject Hose PVC** injectable hose on either side of the Polystop.

5. Legal notice

Apart from the information given here it is also important to observe the relevant guidelines and regulations of various organizations and trade associations as well as the respective standards. The characteristics are based on practical experience and applied testing. Warranted properties and possible uses which go beyond those warranted in this information sheet require manufacturer's written confirmation. All data given was obtained at an ambient and material temperature of +23°C and 50 % relative air humidity at laboratory conditions unless specified otherwise. Please note that under other climatic conditions hardening can be accelerated or delayed.
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