# XPS 500 Overlay Boards

## DATASHEET

VPS UNDERFLOOR HEATING

Customer Reviews 4.9★★★★★

The XPS 500 overlay boards offers a simple solution to install underfloor heating into your home without the need to uplift your floor. The panels can be placed directly onto any solid surface and are a perfect choice for retrofit installations.

XPS panels are made from extruded polystyrene with a high compressive strength of 500 kPa. XPS is the perfect insulation material as it is resistant to mould, lightweight and durable.

The 20 mm thick boards are low profile and hold 16mm pipe in chanels. Lightbulb-shaped 180° returns allow a pipe spacing of 120mm  while minimising the risk of pipe damage.

The panels are topped with 200 micron thick aluminium foil ensuring that heat spreads evenly across the area of the board and entire floor. The aluminium continues within the pipe channels to improve efficiency.

| | |
|---|---|
| **Length** | **1200 mm** |
| **Width** | **600 mm** |
| **Thermal Resistance (R)** | **0.9 m2 k/w** |
| **Pipe Spacing** | **120 mm** |
| **Micron** | **200** |
| **Compressive Strength** | **500 kPa** |
| **Board weight** | **1.20 kg** |

### Key Features

- ☑ Low Profile
- ☑ Lightbulb turns
- ☑ 120 mm pipe spacing
- ☑ High compressive strength
- ☑ Laid onto any existing, level flooring
- ☑ 200 micron - total coverage including chanels
- ☑ Return loops standard in every panel

**Floor Covering**

**XPS Boards**

**UFH Pipe**

**Solid Existing Floor**

*Floor build up varies depending on floor covering*

# XPS 500 Overlay Boards

## INSTALLATION

Our installation guide will walk you through the steps required to lay XPS underfloor heating panels, ensuring a successful and energy-efficient heating solution.

- ☑ Floor Preparation
- ☑ Board Layout
- ☑ Cutting
- ☑ Fixing Boards
- ☑ Pipe Layout
- ☑ Floor Covering

### You Will Need:

- Adhesive
- Craft knife
- Straight edge
- Marker pen
- A flat & level structural subfloor

### Recommended:

- Router
- Insulation saw
- PPE
- Pipe layout drawing

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## ☑ Floor Preparation

Boards can be fixed to any solid surface; however, the subfloor must be properly prepared by ensuring the floor is **dry, level, stable, and clear of dust & debris.**

A floor levelling compound may be required if the floor surface is uneven to ensure a solid contact between the floor and boards. Remove any material or obstacles that will effect the adhesive from adhering to the floor. Hoover the surface thoroughly.

### Timber Flooring

All floorboards must be properly secured and screwed down. Replace worn or damaged boards to ensure the longevity of the installation.

### Concrete/Screed Floor

Subfloor again must be clear of any dust or coating. Check if a damp proof membrane has been installed. If you are unsure, we suggest applying a liquid damp proof membrane.

### Other

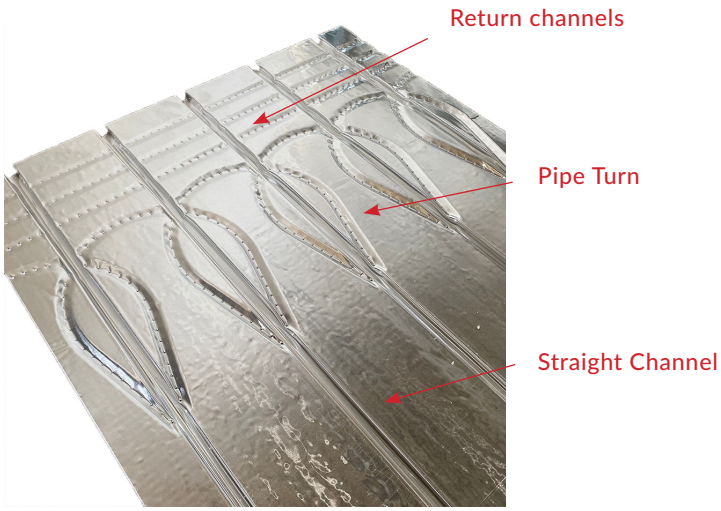
Ensure all floors are cleaned well to ensure proper adhesion. Non-porous flooring such as tiles may require more thorough cleaning to remove any dirt build up.

### Insulation

To guarantee optimal performance of XPS underfloor heating panels, it is vital to adhere to insulation standards. Edge insulation can be used alongside XPS boards to allow for expansion and help reduce heat loss. This is recomended when a screed is being poured over the system.

# Board Layout

Overlay boards are adaptable and can be used for all areas of the system layout. Each board holds 4 straight pipe channels running top to bottom, 3 horizontal channels for flow and return pipes, and pipe turns top and bottom.

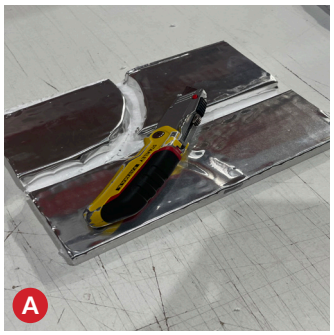



## Transitional Boards

Transitional boards are used in areas of high pipe density. The grooves on these boards are spaced at 30mm. Transitional boards are secured in the same manner as the standard boards.

## Extra Channels & Corners

Extra channels and corners (A) can be cut from the main board if needed. Grooves can be easily cut using a suitable router and 16mm bit. See more on these elements in the cutting section.





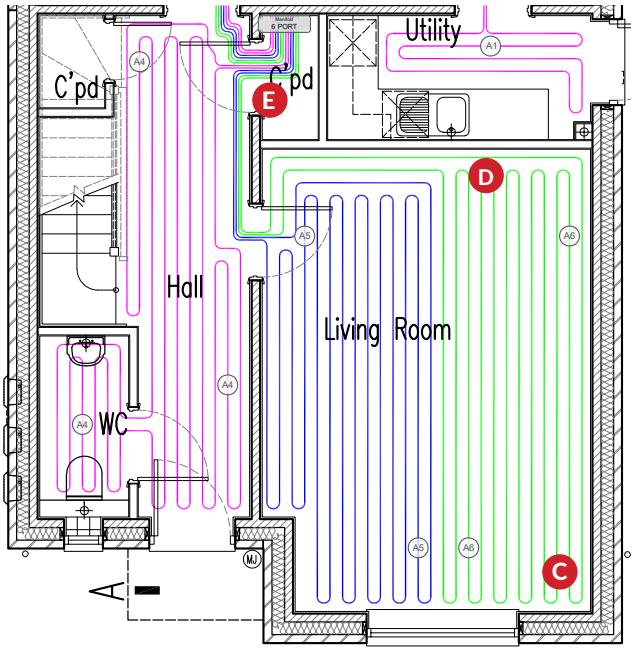
Where there is a corner with high pipe density it can be formed from a transitional board. Cutting two opposite 45° sections will provide a 90° turn (B). A gap of 120mm wide should be left to allow the pipe to curve smoothly. Fill this area using a self leveling mix apply to the level of the overfloor boards.

## Layout Drawing

Familiarise yourself with the pipe layout supplied by VPS. Understanding the configuration of pipes, identifying the flow and return pipes, and locating the position of the manifold. Understanding these details is crucial for ensuring a successful installation of the overlay system.

Begin laying the XPS panels, starting from one corner of the room and working your way across. Ensure that the panels are closely fitted together with no gaps between them.

Our pipe layout drawing doesn't include board positions however if this is something you are struggling with please let us know.




Boards are installed lengthwise following the direction of the pipes. Ensure the pipe turn is positioned at point (C) & (D) shown above. Transitional boards are used for areas with high pipe density leading to the manifold (E).

It can be useful to lay all of the panels on a dry floor in order to find any potential issues with the layout before fixing the panels down. If suitable to pass through walls a space for piping should be drilled through the wall at the correct floor height. The end of the pipe must be taped off to ensure no debris enters the pipe before passing through. Ensure any gaps are filled with insulation and add suitable pipe lagging within the wall cavity.

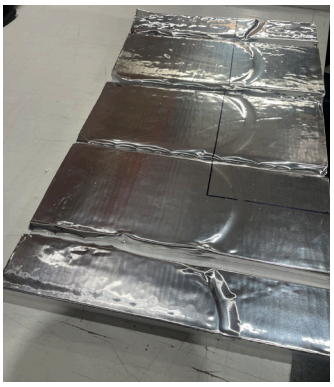
# Cutting

Boards can be cut easily to allow for seamless installation tight to walls and around obstacles. When boards are required to be cut, a marker pen is used alongside a straight edge to provide a cutting line. A craft knife or insulation saw is then used to cut the panels (F). Transitional areas, additional corners, 90° bends and extra pipe channels can be formed where required from whole boards.

Ensure complete floor coverage to minimise downward heat loss. Hold on to offcuts and use them to fill gaps in areas like doorways or alcoves.

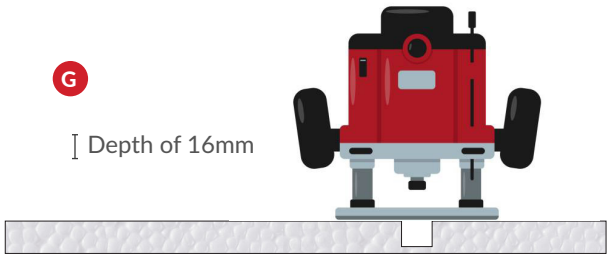
Extra channels and turns can also be created in a panel using a router set at 16mm (G). This is an easier way to complete turns which doesn't require cutting them from boards. Ensure all turns are smooth by initially tracing the shape of the pipe. Follow the marked area with the router to cut the channel. Ensure the channel is clear and free from debris.





## TIPS

- Keep any off-cuts, as they may prove useful later.
- Wear flat-soled shoes or trainers whilst walking on the boards.
- Wear suitable knee protection when kneeling.
- Use a fine tooth saw or craft knife to cut boards




# Fixing to floor

When fixing boards, a high performance contact adhesive will provide a secure bond to the subfloor. Ensure the adhesive is free from all chlorinated solvent as this would damage the board.

A spray adhesive can be used to coat the floor. Follow the manufacturer's recommendations for adhesive application. Ensure that the adhesive covers the entire area where the boards will be placed.

Spray adhesive is designed for quick and strong bonding of boards to Concrete, Screed and Wood. Available in 500ml spray cans and 22ltr canisters for use with a spray gun.

## Adhesive Types

We can supply two adhesive options.

500ml spray Can
Hand-held
Covers 5 $m^2$

13 kg Canister
Requires gun & Hose
covers 200$m^2$


**KEY NOTE**

Some floor surfaces may require an additional coat to be applied to the underside of the overlay boards. This is needed on porous subfloor like wooden floorboards. This will reduce the adhesive coverage by half.

## Placement

Begin laying overlay panels in the corner of the room, ensuring tight edges against the walls during placement. Work along the wall farthest from the starting point. When you reach the opposite corner, start a new row H.

Make sure each boards are installed tightly without any gaps. Ensure that the pipe channels are aligned with every board. A small section of pipe can be used to ensure pipe channels match between boards I.


## Adhesive Application

Shake the spray adhesive well before use and keep it above 16°C for optimal results. If the spray splatters or comes out unevenly, it might have been stored in a cold environment. Warm the adhesive gently in warm water before use and periodically during application to maintain the proper temperature. Spray the adhesive at a distance of 10-20cm J towards the surface, ensuring a uniform and even coat to achieve 80-100% coverage. Avoid over-applying the spray; overlap each pass to create an even coat. Release the spray at the end of each sweep to prevent puddles of adhesive.


Allow the adhesive to tack off until no adhesive transfers to your knuckle when touched. Firmly press down the board onto the adhesive to ensure good contact. Avoid over-applying spray adhesive, as it's unnecessary and leads to poor coverage.

If necessary, mark around each board on the floor with a marker. This provides a guide for where to spray adhesive, minimising over spray and wastage.


Some solid floor surfaces may require an additional coat to be applied to the underside of the overlay boards. This will improve the surface contact between the boards and surface required for subfloor such as wood and tile. This will reduce the adhesive coverage by half K. Always perform a small test area before starting the full instalation.

Ensure a well-ventilated workspace to help dissipate fumes. Additionally, wearing appropriate PPE is recommended to guarantee a safe and effective adhesive application process.

The 500ml spray can be set to three positions - LOW, MEDIUM & HIGH, indicated L, M, H. We recommend setting the spray between M & H.

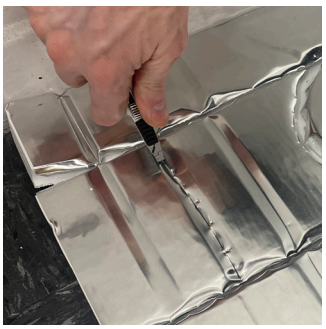
**KEY NOTE**

Spray should be shaken well before use and kept above 16° for best results. If the spray splatters and comes out uneven, this is due to being stored in a cold environment. Gently warm in warm water before use and periodically during use as the spray can temperature will gradually cool down.

# Laying Pipe

Prior to commencing the installation, ensure all boards are fully secure and all pipe channels are free any debris. Refer to the layout drawing continuously when laying pipe runs.

Pipe turns are initially covered by aluminium foil because most boards will only be used for straight channels. Use the layout drawing to determine which turns and return channels are needed. Pierce through the aluminium in these sections with a craft knife and fold the foil down into the channel (L).

Start laying the pipes from the manifold, leaving enough slack for connection to the correct port. It is recommended to use a pipe decoiler when laying especially when one individual is available. The decoiler keeps the piping system organised and prevents tangling or kinking during the installation process.

If a decoiler is not in use carry the pipe coil following the path indicated by the pipe layout, reeling out into the direction of the grooves. Carefully walks along the pipe pushing the pipe down into the straight pipe channel with the sole of your foot (M). Using a second installer can be beneficial at this stage; to help embed pipe into the channels. Fully secure the pipe into the channels gently curving round the required corners.

As you reach the end of a straight segment, Rotate the entire coil by 180°, aligning it again with the direction of the return channel. This manoeuvre serves to prevent the pipe from attempting to twist and maintains tension in a downward direction, reducing the chance of kinks and ensuring secure pipe placement around the turn.

Do not try and form the bend before laying the pipe as this could potentially result in a kink in the pipe. If a kink occurs, wrap the pipe in a warm wet cloth for protection and gently squeeze with pliers to re-shape. Alternatively the pipe can be lifted out of the boards and moved backwards so the kinked section now lays in a straight channel.

If the end of a pipe run sits proud of the surface, it can be tapped down using a wooden batten across the board and gently tapped with a hammer

# Completion

Upon completing the installation of the piping system, the focus shifts to planning for the flooring coverings. Before embarking on this stage, it's essential to address several key considerations to ensure a smooth and successful process.

- Take the time to inspect the installed piping system. Verify that all pipes are securely fastened within their designated channels.
- Label both ends of each pipe to identify each room. Clear labelling reduces the risk of errors or confusion when connecting to the manifold.
- Cover the overlay system boards in areas where foot traffic is unavoidable. This precautionary step shields the heating elements from potential damage during the construction or renovation phase.
- Once connected pressure test the underfloor heating system to 6 bar for a minimum of 1 hour.


**KEY NOTE**

If the channels and turns are not immediately visible, you can reveal them by walking on the surface. Once the material is laid down, walk over the areas where the turns are located. Applying pressure along the grooves will create visible indents, making the pattern easier to see.

# XPS Overlay Floor Panels

## FLOOR COVERING

Overlay floor panels are suitable for various floor coverings. Their high compressive strength enables them to support different floor types, including tile, laminate, engineered wood, carpet, and LVT. Different installation methods are required for each flooring type. It's crucial to read the required section carefully to ensure an efficient and safe underfloor heating system with your preferred flooring. Always consult the manufacturer's guidelines for your chosen flooring material to ensure compatibility and proper installation.

## Preparation

- The underfloor heating system must undergo pressure testing to 6 bar for at least 1 hour.
- Ensure no leaks are evident in the pipework and the system is working as required. Keep the heating system switched off during flooring installation.
- Ensure that all boards are fixed securely. Any board movement must be corrected before proceeding.
- Vacuum the surface to remove dust and debris from the boards, pipes and channels.

## General Notes

Floor heating should **not be used** to aid the drying of any levelling or adhesive compounds to be used. Force drying will affect strength and overall performance.

After installing the floor covering, adhere to the manufacturer's drying and settling periods before activating the heating system to avoid potential damage. If uncertain, allow for an acclimatization period of 7 days.

When turning on the system, gradually increase the heating temperature in small increments, up to a maximum of 5°C per day. This gradual approach helps prevent sudden temperature changes in the floor covering, ensuring its longevity and performance.

Ensure that the chosen floor covering is suitable for underfloor heating. This information should be stated in the product description or indicated by a similar logo.

# Soft Floor Coverings

## Carpet, LVT, PVC, Linoleum ect.

Soft floor coverings like vinyl and carpet require an intermediate layer between the overlay boards and floor covering. This safeguards the underlying system from impacts and sharp objects such as table legs. This can be achieved using the options below. Follow the manufacturer's installation guidance including underlay or vapour layer requirements.

## Option 1. Renovation Screed

- A minimum 5 mm bed of self-levelling screed is recommended to create a uniform subfloor for laying soft floor coverings. Read tile section for more information on self leveling process.

## Option 2. Overlay

- An overlay board can be used as an intermediate layer. (6mm plywood, heat pack overlay boards)
- Boards can be floating if using T&G, stuck with adhesive or screwed. Caution must be taken when placing boards to avoid damaging the system and pipes below.

## Carpet

Before laying overlay panels, secure a wooden batten around the perimeter of the room to provide a surface for attaching carpet grippers.

## LVT, Vinyl Laminate & PVC Rolls

Ensure that the adhesive chosen is specifically designed and approved for use with underfloor heating systems. This will prevent issues such as flooring becoming unstuck, bubbling, or edges curling upwards.

We recommend the use of a floor probes to monitor floor surface temperature, however, it's particularly crucial where floor coverings have an upper temperature limit. The floor probe is typically placed between the floor covering, usually within the XPS panel or in the self-levelling screed.

**KEY NOTE** The maximum resistance including intermediate layer, underlay and floor covering should not exceed 2 tog or 0.2 m² K/W.

# Wooden Floor Coverings

## Laminate, engineered wood, parquet

Most wooden floor coverings can be placed directly on top of XPS panels. However, it's crucial to adhere to the flooring manufacturer's instructions for proper installation. This may involve installing a floating floor or fixing it with adhesive. **Always check that your flooring choice is suitable for use with underfloor heating.**

Wood is highly susceptible to expansion and contraction, especially when subjected to floor heating. Therefore, it's essential to leave adequate expansion gaps of around 15 mm. These gaps are vital for underfloor heating systems and include walls and objects. These gaps are covered by skirting boards.

If recommended by the flooring manufacturer, include underlay or a vapour barrier underneath. Ensure all materials used are suitable for underfloor heating, and opt for a lower tog rating for better heat output. **The maximum resistance of all floor coverings should not exceed 2 tog or 0.2 m² K/W.**

We recommend the use of thermostats equipped with floor probes to effectively regulate floor surface temperatures. Most floor coverings have a maximum temperature of approximately 27°C to protect against damages caused by overheating. Using a floor probe will ensure precise temperature control and safeguard the longevity and performance of your flooring.

Flooring should be acclimatized to the environment to prevent immediate contraction or expansion after installation. Lay packs of boards flat in the room for the time recommended by the supplier. Engineered wood typically requires 48 to 72 hours for acclimatisation.

After installation, let the floor acclimate and follow any specific care and maintenance instructions provided before turning on your heating system. Gradually increase the heating temperature each day - we recommend increases of a maximum of 5°C per day.

## Floorboards

Floorboards should be placed at 90 degrees to the direction of the pipe. If the floorboards are to be fixed rather than a floating floor, follow the correct spacing and methods to ensure a secure and stable installation. Care must be taken not to damage the XPS heating panels during the installation of the wooden flooring. Fixing with an acrylic adhesive will allow for expansion and contraction of floorboards over the system.

## Solid Wood

Solid wood floor coverings can be prone to flexing and damage due to changes in heat and moisture levels. It's essential to confirm with the supplier that the chosen solid wood flooring is suitable for use with UFH systems to minimise these risks.

## Engineered Wood

Engineered wood flooring is an excellent choice for underfloor heating. It offers both strength and stability, allowing the floor to expand and contract better than solid wood flooring. Thickness between 15-20mm are suitable, although 20mm will take longer to heat up initially, they retain heat for longer periods. This makes them more energy-efficient in the long run.

## Parquet

Solid wood parquet exhibits more seasonal expansion and contraction compared to laminated parquets. We advise the use of a self-levelling compound as an intermediate layer when solid blocks are used.

## Laminate

Laminate is much more resistant to temperature changes and will not warp or change shape at higher temperatures. Thickness of boards will affect heat transfer. We recommend laminate no thicker than 18mm.

# Tiled Floor Covering

Thanks to their high compressive strength, XPS boards can support renovation screed and heavier floor finishes. This makes them an ideal choice for supporting tiled floor finishes.

## Preparation

Follow these steps to make sure your system is prepared before installing tiles.

- Ensure that all boards are fixed securely, any board movement must be corrected before proceeding. This can result in cracking or other damages.
- All unused channels covered with foil must be broken to prevent unsupported weak spots in the finished flooring. Press the foil tight against the curve, these will be filled later in the process.
- Vacuum the surface to remove dust and debris from the boards, pipes and empty channels.
- It is essential that the under floor heating is pressure tested to ensure no leaks are evident in the pipework and the system is working as required.
- Floor heating should NOT be used to aid the drying of any levelling or adhesive compounds to be used. Force drying will affect strength and overall performance. Leave system off during floor installation.

Various adhesives and levelling products can be used for installing floor finishes on VPS Overlay panels. Below are instructions for two leading brands, Mapei and Ultra Floor. Make sure to adhere to the guidelines provided by the brand you are using.

ULTRA FLOOR

1. Prime the entire surface with an application of UltraFloor Prime it. Ensure an even coat over the pipes and empty channels thoroughly. Roller coat the board across the entire foil surface. Avoid thick sections or pooling in channels and around pipes that will only delay drying.
2. Ensure the primer is fully dry before continuing; typically, this is within 2 hours but is dependent on temperature conditions and application thickness. It is essential that all exposed surface including unused channels and pipes are primed thoroughly and are dry before continuing.

### Option 1. (Minimum tile size 10cm x 10cm)

3. Apply UltraTilefix ProFlex S2 tile adhesive to the primed boards and ensure to fill any unused channels
4. Whilst still wet apply the same adhesive using a rounded notch floor trowel to suit the installation, over the surface. Bed tiles immediately. Pressure applied to the tile should be sufficient to create 100% contact of the adhesive with the back of the tile.
5. If using large format tiles (tile with at least one side 300mm or greater) that the back of the tile is also back buttered with the adhesive to ensure there is 100% contact creating a secure bond.
6. Once cured (24 - 48hrs dependent on conditions) use UltraTilefix ProGrout Flexible to grout the joint to complete the installation.

### Option 2. (All tile sizes)

3. Apply UltraFloor Level it Two to the prepared boards ensuring a minimum depth of 5mm above the top of the heating pipes.
4. Ensure all unused channels & pipe sections are filled with the compound.
5. Allow the leveller to cure for 48 hrs
6. Apply UltraTilefix ProFlex S2 tile adhesive using a trowel to suit the installation. Bed tiles immediately. Pressure applied to the tile should be sufficient to create 100% contact of the adhesive with the back of the tile.
7. Ensure that if using large format tiles (tile with at least one side 300mm or greater) that the back of the tile is also back buttered with the adhesive to ensure there is 100% contact creating a secure bond.
8. Once cured (24 - 48hrs dependent on conditions) use UltraTilefix ProGrout Flexible to grout the joint to complete the installation.


# Ceramic, Porcelain, vitrified & Quarry

## Option 1.

Bond tiles directly to the boards with Mapei Kerabond T & Isolastic (100%)

1. Mix Kerabond T & Isolastic at a Ratio of 100 : 33, Kerabond : Isolastic. Isolastic is a synthetic polymer that improves the performance of the tile adhesive. Mix with correct ratio of clean water until a smooth, lump-free paste is obtained. Leave to rest for 5-10 minutes and re-stir.
2. To achieve good adhesion spread a thin layer of Kerabond T on the substrate using the straight edge of the trowel. Apply the necessary thickness of Kerabond T using a suitable notched trowel.
3. Spread only as much mortar as can be tiled before product skins over. Place the tiles firmly onto the wet mortar. Push the tiles back and forth in a direction perpendicular to the trowel lines, which collapses the mortar ridges and helps to achieve maximum coverage.
4. If needed, carefully clean tiles with water. Wait at least 24 to 48 hours after installation before grouting, so that the mortar is sufficiently set.

## Option 2.

Prime with Mapei Eco Prim Grip, instal 5mm of Mapei Ultraplan Renovation Screed, Bond tiles using Mapei Kerabond T & Mapei Isolastic (100%)

1. Prime the boards with Mapei Eco Prim Grip.
   Eco Prim Grip Plus may be applied to the substrate by brush or roller
2. Level with a minimum 5mm Mapei Ultraplan Renovation Screed. Pour a 25 kg bag of Ultraplan Renovation Screed 3240 into a bucket containing 4.25-4.5 litres of clean water and mix with a low speed electric mixer to obtain an homogeneous, self-levelling, lump free mix. Apply in a single coat from 5mm - 10 mm in thickness. To minimise aeration a spiked roller may be used.
3. Bond tiles using Mapei Kerabond T & Mapei Isolastic (100%) follow instructons from option 1.

# Natural Stone tiles

1. Prime the surface with Mapei Eco Prim Grip.
2. Level with min. 5mm Mapei Ultraplan Renovation Screed.
3. Bond tiles to intermidate screed layer using Mapei Kerabond T & Mapei Isolastic (100%)

# Wet room

1. Prime with MAPEI eco prim grip, instal 5mm of MAPEI ultraplan renovation screed
2. Prime the aluminium surface with MAPEI eco prim grip,
3. Level with min. 5mm MAPEI ultraplan renovation screed.
4. Apply Mapei Mapelastic Aquadefence/mapei Mapeband
5. F Bond tiles using Mapei kerabond T & MAPEI isolastic (100%)

VPS UNDERFLOOR HEATING

If you have any queries regrading our XPS panels and would like to speak to an expert. Please get in contact.

Customer Reviews
4.9 ★★★★★