

EWI Installation Guidelines



- Installation best practice
- Step by step guides
- External Wall Insulation processing rules

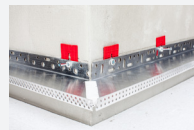
EWI Installation Guide



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- Fixing the base rail
- Corners
- Clip on trim



STAGE 2: Insulation boards

- Applying the adhesive mortar
- Fitting the insulation boards
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Featured System:

STARSYSTEM EPS

- BBA approved system
- Flexibility and protection
- Available in a wide range of solutions

SilikonTop	TOPCOAT
PremiumPrimer*	PRIMING
StarContact white	BASECOAT
StarTex	REINFORCEMENT
StarTherm	INSULANT
StarContact white	ADHESIVE
STR U 2G	FIXING ANCHOR

Benefits:

- Excellent flexibility and impact resistance
- Extremely weatherproof
- Easy to apply
- Mineral gives excellent fire resistance
- Guaranteed security for generations
- 30 years experience
- BBA approved system





STAGE 1: Installing the base rail

Baumit BaseProfile Therm

The base profile protects the underside of the to the first row of insulation boards.

Products

Baumit BaseProfile Therm - PVC "L" section profile, plastic connector pins and clip-on Baumit DripBead with a mesh attachment.

Baumit Shims - plug and screw fixings and plastic packers for fixing the BaseProfile.

Advantages

- Reduced thermal bridging
- Easy to cut
- Unhindered drilling and fixing
- Won't bend in transit

Step 1:

Starting at one end, drill a borehole into the substrate through the perforated up-stand on the L-section.



Step 2:

Push the screw fixing through into the borehole just tight enough to support the L-section.



Step 3:

Place a packer between the substrate and the L section and push it down into the fixing shaft until it clicks.



Step 4:

Check for level with a long spirit level and continue fixing.



Step 5:

Butt each following L-section up tight and continue until a complete wall section is finished.



Step 6:

Check the overall alignment of the L-sections and insert more packers where needed. Screw or hammer the fixing up tight.



Step 7:

Cut the L-section with an angle grinder or hack saw.



Step 8:

Line up the angle cuts to form the corner.



Fixing the Baunit BaseProfile Therm

- Mark the wall surface with a chalk line to guide where the profile will sit.
- The profile is fixed into position at or above the horizontal damp proofing course (DPC) of the wall.
- It must sit level and in line, and be fixed at max.300mm centres.
- A packer must always be used with the plug and screw fixings to accommodate the adhesive mortar thickness between the insulation board and the substrate.

Corners

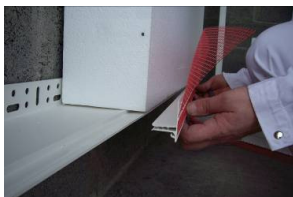
- Corners (internal and external) can be formed with two 45° angled cuts of the base profile.

Fixing the DripBead

- The insulation boards must be fitted and stable before clipping on the base profile drip bead.
- Cut the trim with an angle grinder or snips.
- The "L" section joints must be overlapped by at least 100mm with the drip bead.

Step 9:

Starting at one end, line up the drip bead with the lip of the base profile and push in tight up to the insulation board.



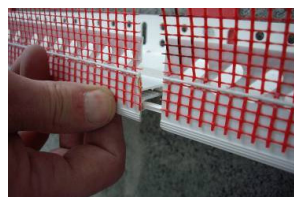
Step 10:

Insert a plastic pin connector into the clip-on trim.



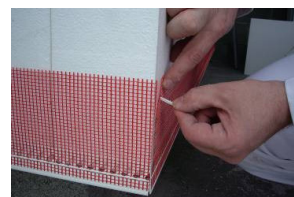
Step 11:

Slot the next trim onto the pin connector and push the trim up tight to the insulation boards.



Step 12

Temporarily prop the mesh strip with a trim connector.



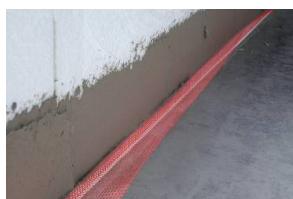
Step 13:

Holding the mesh away from the boards...



Step 14:

...apply a full layer of basecoat mortar behind the mesh strip.



Step 15:

Trowel the mesh into the basecoat mortar.



Step 16:

Smooth out the mortar.





STAGE 2: Installing the insulation boards

Insulation Boards: EPS

The insulation boards provide the thermal wrap around a building.

Components

Baumit StarTherm 031 - grey EPS boards
Baumit StarContact White

Key Information

- The insulation boards should be fitted with the joints butted tightly and the surfaces flush.
- The joints between the boards must be free of adhesive mortar.
- Each row should stagger bond over the previous one by about half a board. (*Image 1*)
- Board off-cuts (min. 150 mm lengths) may be used in the main wall areas but not at the building corners or openings. (*Image 2*)
- Board edges must not form a cross joint at the corners of openings as this may induce cracking in the render. (*Image 3, 4, 5*)
- All connections to other building elements and penetrations through the EWI must be properly sealed with joint seal band to resist driven rain and accommodate expansion and contraction.
- All construction movement joints must be incorporated into the insulation system and be watertight.

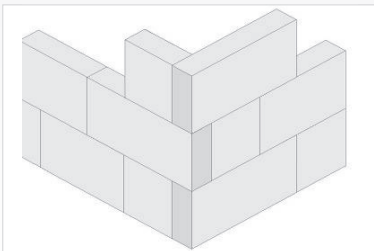


Image 1: A full board is fitted on one side of the building corner and a half board on the other side. This is reversed on the next row.

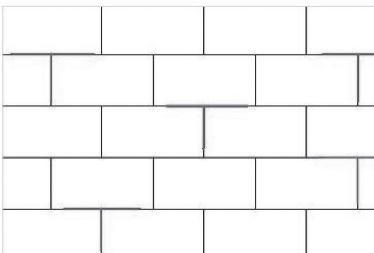


Image 2: Continue from the corner with full boards along each row to produce a staggered half bond or T-joint pattern.

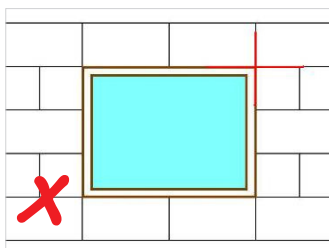


Image 3: Avoid creating cross joints at openings.

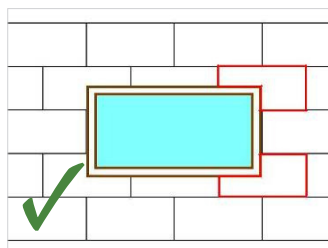


Image 4: Whole boards to be used around the corners of windows and other construction openings.

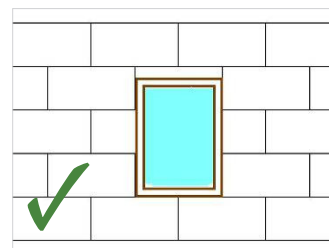


Image 5: Another acceptable method creating no cross joints.

Projecting Elements

Small elements protruding from the wall may be bridged over by cutting out recesses in the back of the insulation board.

- A maximum of one third of the board thickness may be removed to cover protruding elements.
- Check with service providers regarding access requirements to pipework, cables etc before concealing behind the EWI system.



Fitting the insulation boards

Step 1: Mixing the adhesive mortar

The adhesive mortar can be mixed with an electric hand mixer or a horizontal mixer.

- Leave the adhesive mortar to stand for five minutes and quickly mix through again with the hand mixer.
- The adhesive mortar remains workable for up to 1½ hours.
- Do not remix the adhesive mortar later with more water!

Sprinkle the dry powder adhesive into clean water. Mix with an electric hand mixer at slow speed setting to a smooth, workable mortar.



Alternatively a horizontal mixer provides instantly mixed mortar at the touch of a button





STAGE 2: Installing the insulation boards

Step 2: Applying the adhesive mortar

TIP: Use stainless steel tools!

- The standard application method (Fig. 1) can cope with background undulations up to 10 mm.
- Enough adhesive mortar to obtain a min. 5mm bonding joint and a min. 40% bonding contact to the substrate surface
- The mortar strip seals the back edges of the board to prevent air circulating and the bond strength resists potential curling of the board through shrinkage.
- A direct mix and application from a mortar pump with a pistol attachment speeds up working time (Fig. 2).
- An alternative full surface bonding application is limited to very flat backgrounds such as precast concrete form-work (Fig. 3).

Apply 3 equally spaced adhesive mortar dabs through the centre line of the insulation board and a strip around the edge.



A direct mix and application from a mortar pump with a pistol attachment speeds up the application of the adhesive mortar to the board.



For application on flat backgrounds, apply a full coat of adhesive mortar onto the insulation board surface and comb through with a stainless steel notched trowel.



Step 3: Fitting the insulation board

- Always fit the insulation board immediately after applying the adhesive mortar.
- Keep the edges of the insulation boards clean.

Step 1:

Place the board on to the wall and 'wiggle' it into position.



Step 2:

Butt the boards tightly together and ensure the surfaces are flush.



Step 3:

Remove excess adhesive mortar.



Step 4:

Check that the boards are flush and in line. Do not bang the boards!



Step 5:

EPS insulation boards can be cut with a hand saw, a 'hot knife' or a 'hot wire'.



Step 6:

Cut a wedge of insulation material.



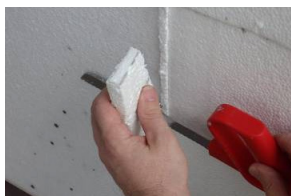
Step 4: Filling joints

- Gaps between boards over 5mm must be filled in with insulation material.
- Gaps up to 5mm can be filled in with system insulating foam using a foam gun.
- The final surface should be smooth and flat.
- Remove all dust from the surface prior to the application of the basecoat.

Use to press firmly into the gap.



Cut back the excess as slightly proud of the surface.



Fill in joint gaps less than 5mm with system foam.



Rasp back the surface of the insulation boards, removing all undulations leaving a smooth flat surface.





STAGE 3: Windows, doors & sills

Connections, joints and penetrations

The joints between the insulation material and other building elements (window and door frames, sills, soffits etc) must resist water penetration and accommodate expansion and contraction.

Fitting the joint seal band

- The seal band should sit flush or in (max.3mm) from the face of the insulation board.
- Do not go around the corners of an element as this will prevent the band from expanding in these areas.
- Joint seal band off cuts can be butted together.

Components

Joint Seal Band:

15/2-6 for 2 - 6mm joints

15/3-9 for 3 - 9mm joints

15/5-12 for 5 -12mm joints

Joint Seal Band

Joint seal band is an expanding sticky back expanding band fitted in a compressed state to provide effective water tightness.

Note: Caulking compounds and mastic fillers cannot be substituted for joint seal band. Over time they can lose their elasticity, become brittle and require subsequent maintenance and/or renewal.

Step 1:

Clean the building element to ensure the joint seal band will stick.



Step 2:

When finished, the façade insulation boards should carry past the window reveal and sit 5 – 10mm in from the inside edge of the sill up-stand to accommodate the angle bead edge by at the least the planned thickness of the reveal insulation (min. 30mm).



Step 3:

Carefully position the band onto the element taking care not to stretch it.



Step 4:

Only apply enough band required as it will expand quickly once off the roll. Fully expanded band will be more difficult to compress later.



Step 5:

Band is also required under the sill, and must sit flush with the board surface.



Step 6:

The expander band is there to waterproof the junctions between the board and solid objects, and it therefore must be fitted tightly.



STAGE 4: Fixing Anchors

Mechanical Fixings

Constructive fixing – for backgrounds which do not provide enough pull off resistance.

- Supplementary mechanical fixing is required where a purely bonded system is deemed unsuitable. This generally applies to buildings higher than 2.5 storey.
- Pull off tests (adhesive mortar + reinforcing mesh) should always be carried out on buildings with rendered walls.
- Factors determining the type and number of fixing anchors include the building design, location, substrate material and condition.

Number of fixing anchors

- A minimum number of fixing is required in all cases. Fixings must be placed at 400mm Centers (approx) at all openings; windows, doors and external corners.
- Additional fixings may also be required if the building is located in areas with high wind exposure.
- Tall buildings will need to be individually assessed by the designer, architect or installer to confirm the required number.

Plinth and splash zones

Perimeter and plinth insulation boards must be mechanically fixed at 300 mm above the finished ground level (splash zone).

Selecting the anchor

Only Baunit system approved plastic fixing anchors may be used. These are either screw type or hammer drive anchors. Pull out tests should always be carried out on rendered or unidentified substrates before final specification.

Baunit STR U 2G

Recessed or surface fixed screw-set anchor for use in most substrates.

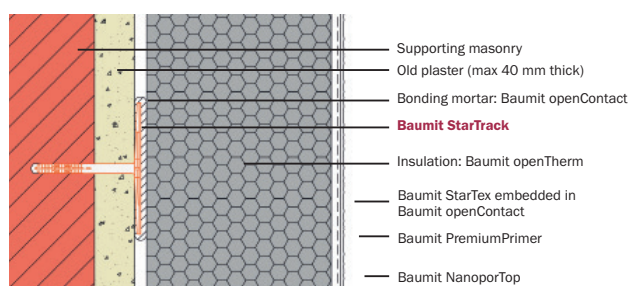


Max insulation thickness	Fixing length
80 mm	115 mm
100 mm	135 mm
120 mm	155 mm
140 mm	175 mm
160 mm	195 mm
180 mm	215 mm
200 mm	235 mm

Alternative fixing option:

Baunit StarTrack

Supplementary mechanical fitting as an alternative to traditional fixings, for use with perforated building materials, aerated concrete and critical backgrounds. Part of the Baunit OpenSystem.





STAGE 4: Fixing Anchors

Anchor Lengths

The required pull out resistance will only be achieved with the specified length.

Calculating the required anchor length:

anchoring depth + existing render + adhesive mortar thickness + insulation thickness.

Drilling the borehole

- The adhesive mortar must be sufficiently hard before installing supplementary mechanical fixing. The drill bit should be the same thickness as the anchor shaft.
- The power drill hammer action should not be used when boring into hollow or perforated masonry.
- Care must be taken not to damage the reinforcing mesh in the render basecoat. The drilling depth should be 10 -15 mm longer than the anchor.

Installing the fixing anchors

- The fixing anchor must be secure. Remove and replace unsecured fixing anchors. Plug any holes with insulation material.
- Fixing anchors may sit flush with the insulation board surface or be countersunk into the insulation material.
- **Note:** Anchors should be fitted into substrate temperatures $\geq 0^{\circ}\text{C}$.
- Polyethylene anchors should not be left exposed to direct sunlight (ultra violet rays) for longer than 6 weeks.

Rondelle - Insulating plugs and caps for anchors

The Rondelle insulating plugs and caps reduce the thermal bridging caused by supplementary mechanical fixing.

Anchors Sitting Flush:

Action

- Drill the bore hole
- Insert the anchor
- Slot the power drill screw bit into the anchor screw head, turn on the power and screw in the anchor, slightly compressing the insulation material until the anchor head sits flush with the board surface.
- Withdraw the power drill with a slight twisting action to the left.
- Insert the Rondelle insulating plug into the anchor screw shaft.



Countersinking the anchors

The STR U fixing kit countersinks the fixing anchors into the insulation board. It combines a screw bit, a hole saw blade and a stop plate, and is mounted onto a standard power drill. As the power drill is turned on, the hole saw blades cut into the insulation material immediately behind the anchor head. The screw action sinks the anchor into the insulation. The stop plate prevents the anchor from being fixed too deep.

Action:

- Drill the borehole.
- Insert the anchor.
- Slot the power drill screw bit into the anchor screw head, turn on the power and screw in until the depth plate touches the insulation board surface.
- Withdraw the power drill with a slight twisting action to the left.
- Insert the Rondelle insulating plug into the anchor screw shaft.
- Insert the Rondelle insulating cap over the fixing anchor head
- Anchor head sits flush with the board surface.
- Withdraw the power drill with a slight twisting action to the left.
- Insert the Rondelle insulating plug into the anchor screw shaft.





STAGE 4: Fixing Anchors

STR U Counter Sunk and Capped Fixings

STR U Fixings are required when additional mechanical fixing is required.

Products

Baumit STR U 2G fixing
Baumit STR U Plugs
Baumit STR U 2G Grey EPS Cap
STR U drill attachment

Advantages

- Gives additional mechanical support
- Reduces thermal bridging



Step 1:

Drill through the insulation board and into the wall, approx 75mm into the background.



Step 2:

Push the screw fixing through into the borehole.



Step 3:

Place the fixing head flush on the surface.



Step 4:

Using the STR U drill attachment placed on the head of the fixing, drill the fixing into place.



Step 5:

Fixing will be counter sunk to 15mm when the drill locks.



Step 6:

Remove the drill and place a STR U Plug into the shaft void to stop thermal bridging.



Step 7:

Fit the plug into the shaft.



Step 8:

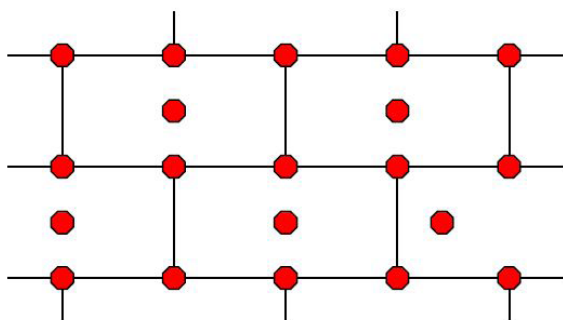
Push cap on to the head of the fixing, pushing in until level with surface.



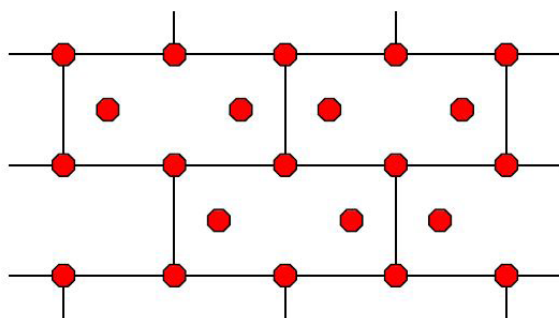
Mechanical Fixing Patterns

The fixing anchors are placed at each corner and T-joints of the insulation boards with one anchor in the middle of each board (6 anchors /m²) or two evenly spaced through the horizontal middle line (8 anchors /m²).

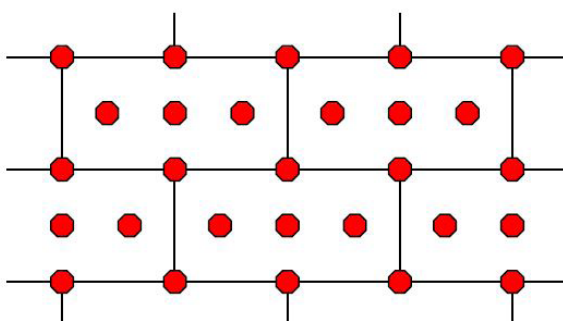
The anchors should line up with the adhesive mortar dots and strips behind the insulation board.



6 fixing anchors /m²



8 fixing anchors /m²



10 fixing anchors /m²



STAGE 5: Applying the basecoat

Beading and Profiles

Additional reinforcement

Openings create a weak point in a structure and the resulting stresses may cause render to crack. These areas require additional reinforcement over the corners of the openings and around the internal corners of walls and reveals.

- Additional reinforcement mesh and profiles generally sit tight on the surface of the insulation so as not to compromise the render basecoat reinforcement layer.

Components

Baumit StarContact White
Baumit StarTex Fine
Baumit CornerBead
Baumit StopBead with Mesh
Baumit DripBead
Baumit Expansion Joint V-Profile
Baumit Expansion Joint E-Profile

Beading corners, edges and additional reinforcements

Beads for corners, edges, drips and render stops all have glass fibre mesh strips attached which must bind in with the reinforcing mesh in the render basecoat

- Beads and profiles must sit level and true in a full bed of Bonding Mortar.
- Angle beads must be set in line with the basecoat render depth.
- Angle beads will be completely covered with the basecoat render.

Step 1:

Apply reinforcing mesh strips (min 250 x 250mm) diagonally across the opening corners into a tight coat of bonding mortar.



Step 2:

Smooth out flat.



Step 3:

Apply additional reinforcement mesh around internal corner of head and reveal a tight coat of bonding mortar.



Step 4:

Apply additional reinforcing mesh (min 200mm wide) around internal corners in a tight coat of bonding mortar.



Step 5:

Apply a full bed of mortar approx 150mm wide and comb through with a notched trowel to set the depth for the angle bead.



Step 6:

Place the angle bead in position level and smooth out the mesh.



Basecoat

Applying the basecoat render

The reinforced render basecoat protects the insulation boards to ensure long-term durability and performance of the EWI system. It must successfully resist impact loading and water penetration.

Components

Baumit StarContact White
Baumit StarTex Fine

Before applying the basecoat

- The insulation layer must be stable, dry and free of dust, dirt or loose materials.
- The insulation layer must be flat
- There should be no damage or unfilled gaps in the insulation.
- All sealing details should be completed.
- Fixing anchor heads must sit flush with the board surfaces.

Basecoat and reinforcement

- The basecoat must have a uniform thickness throughout.
- The reinforcing mesh must lie flat in the top third of the basecoat thickness
- An overlap of min. 100mm is required between adjoining mesh sheets and mesh strips on beading.
- Additional reinforcement under the basecoat is required over openings, and around the internal corners of walls and reveals
- Openings create a weak point in a structure and the resulting stresses may cause render to crack.
- Lay the reinforcing mesh sheets onto the mortar and lightly trowel over the surface from the middle outwards to avoid creasing.
- Apply a little more material as necessary to cover the mesh leaving it just under the surface.

Step 1:

Apply reinforcing mesh strips (min 250 x 25mm) diagonally across the opening corners into a tight coat of bonding mortar.



Step 2:

Apply additional reinforcing mesh (min 200 x 200mm wide) around internal corners in a tight coat of bonding mortar.



Step 3:

Spray or hand apply the bonding mortar over the surface and smooth out with a trowel or plastering rule.



Step 4:

Comb through the mortar with a notched trowel to set a uniform depth of thickness.



Step 5:

Starting 30mm in from the corner edge of the angle bead, lay the mesh sheet lightly onto the mortar.



Step 6:

Lightly trowel over the mesh surface from the middle outwards to avoid creasing.



Step 7:

Press the edge of the mesh sheet a little deeper into the mortar with the tip of the trowel.



Step 8:

Overlap the next mesh sheet (min 100mm) onto the edge and lightly smooth out with the trowel. Apply additional material as necessary to cover the mesh, leaving it just under the surface.





STAGE 5: Applying the basecoat

Beading and Reinforcement

The reinforced render basecoat protects the insulation boards to ensure long term durability and performance of the EWI system. It must successfully resist impact loading, hygro- thermal shock and water penetration.

Components

Baumit CornerBead
Baumit StopBead
Baumit DripBead
Baumit Expansion Joint V Profile
Baumit Expansion Joint E Profile

Beading corners and edges

Beads for corners, edges, drips and render stops all have glass fibre mesh strips attached which must bind in with the reinforcing mesh in the render basecoat

- Beading work must be completed before applying the render basecoat.
- The beads will only stick to a clean dry surface, so it is important to clean the frames before sticking the bead.
- Beads and profiles must sit level and true in a full bed of bonding mortar.
- Angle beads must be set in line with the basecoat render depth.
- Angle beads will be completely covered with the finish coat render.

Window seal beads

Window sealing beads provide a flexible, watertight connection between the render system and the window frame. The beads have a removable rigid strip to protect the window frame from trowel scratches.

Components

Sealing Bead "Standard"
Sealing Bead "Teleskop"
Sealing Bead "Plus"
Sealing Bead "Flexible"

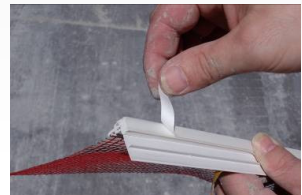
Step 1:

Measure and cut the seal beads for the vertical reveals first.



Step 2:

Peel off the paper tape at the back of the bead and press the bead firmly into position, starting on the inside edge of the sill end cap and working upwards.



Step 3:

Press the bead firmly into position, starting on the inside edge of the sill end cap and working upwards and repeat for the window real head.



Step 4:

Cut and fit the seal bead for the head of the window frame.



Step 5:

Peel off all the yellow paper tape from the protection strip to expose the sticky surface to allow the application of polythene sheet to protect the window from mortar splashes.



Step 6:

After the rendering is completed, pierce the protection strip with a knife and peel it away.

STAGE 6: Applying the topcoat

Finish Coat Render

Finish coat renders provide a decorative finish to EWI systems. They are ready-mixed in tubs, available in a range of textures, aggregate sizes and colour.

This section covers:

- Applying a primer coat
- General-Finish coat renders
- Coverage Rates
- Mixing and Application
- Coat Thickness
- Finishing
- Finish Options
- Weather conditions



Suitable Baunit Products

Baunit Top Paste Renders:

Baunit NanoporTop
Baunit SilikonTop
Baunit GranoporTop
Baunit SilikatTop

General Notes

1. Applying the Primer

The render basecoat should be primed with Baunit Premium Primer for ready mixed finish renders. This can be applied with a roller or brush and can be diluted with a small amount of water. The primer will equalize background suction which helps to create a uniform finish render coat.

The primer can also be colour matched to the finish render where certain textures may expose the render basecoat.

Primer should dry for at least 24 hours.

2. General Finish Coat Renders

Background must be dry and uniform prior to application

Only stainless steel tools should be used. Aggregates can scratch metal out from standard trowels and which can later appear as rust stains on the finished façade.

3. Coverage Rates

Coverage rate depends on the renders grain size. This information can be found on the individual product data sheets.



STAGE 6: **Applying the topcoat**

4. Mixing and Application

Baumit Tops, ready-mixed renders can be hand applied or spray applied with a mortar pump and attachment.

Before applying the render it must be mixed thoroughly with a whisk. During mixing consistency can be adjusted if necessary by adding a small amount of water.

Apply the finish render on to the primed basecoat and smooth out flat with a trowel to the thickness of the aggregate. Shortly after, texture the finish render with a plastic trowel.

Baumit Tops can be applied with a stainless steel trowel, which will draw up the grain, or it may be sprayed on with a suitable fine spraying machine. Apply finish across and down the wall, maintaining a wet edge at all times.

5. Coat Thickness

Coat thickness is defined as the grain size of the selected material and is applied to one-grain thickness. i.e 1.5mm SilikonTop =1.5mm layer thickness.

Several passes of the steel trowel with pressure applied will ensure coat thickness.

6. Finishing

This coat is immediately finished off after laying with a plastic trowel.

The more the surface is rubbed and structured, the finer the finish will become due to fine particles being drawn up to the surface.

Work in small circular motions to achieve a uniform finish. Two passes are necessary to remove any blemishes.

7. Finish Options for Mineral Renders

Mix as follow:

- Place water in the bucket
- Add powder finish coat from the bag
- Mix with a drill whisk
- Remove material from the bucket and apply on the wall with a steel trowel to one grain size
- Several passes of the steel trowel with pressure applied will ensure coat thickness
- Finish with a sponge float again working in small circular motion to achieve a uniform finish
- Depending on texture required, work as necessary
- For a rough texture a red open cellular sponge maybe used

8. Weather Conditions

Decorative finish renders are generally thin coat with aggregates sizes ranging from 1 – 3 mm. Exposure to direct sunlight, wind and warm temperatures can rapidly dehydrate the render leading to bond failure and irregular texturing.

The application area should be protected with scaffolding nets or similar.

Step 1:

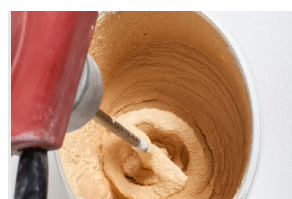
Mix the primer in the bucket using a whisk.

**Step 2:**

Apply the primer over the surface using a brush or roller. Allow to dry for 24 hours.

**Step 3:**

Mix the SilikonTop (or chosen paste render) with a whisk.

**Step 4:**

Apply the finish render to 1.5 grain thickness using a steel trowel.

**Step 5:**

Using a plastic float, working in small circular motions, texture the surface to a uniform finish.

**Step 6:**

Protect the newly rendered facade until set and dry. This will be 2-3 days approx in normal weather conditions.



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Ideas with a future.