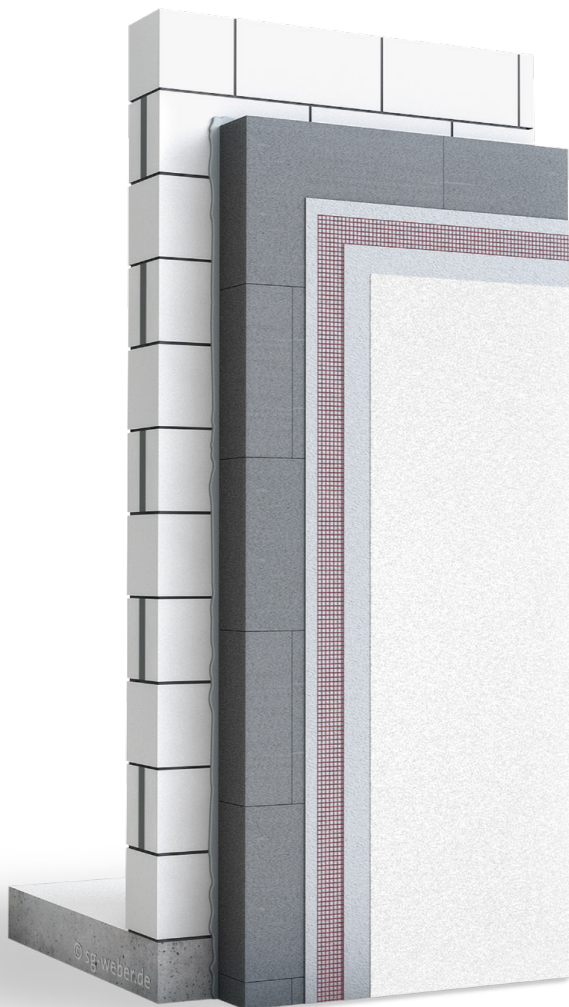


Etics weber.therm B 200

The economical Etics for new and old buildings



- **Hardly combustible**
- **Thin-layer, mineral and organic top coat renders**
- **With AquaBalance technology: particularly resistant to algae and fungi growth**

Scratch render fine-grained

Mineral scratch render with a fine-grained texture.
Grain size:
1.0–2.0 mm



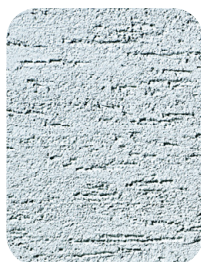
Scratch render granular

Mineral scratch render with an open and natural texture.
Grain size:
3.0–5.0 mm



Rilled render

With a rustical and lively texture. As mineral or organic render.
Grain size:
1.5–3.0 mm



Smoothed render

Mineral render with a fine-grained and smooth surface

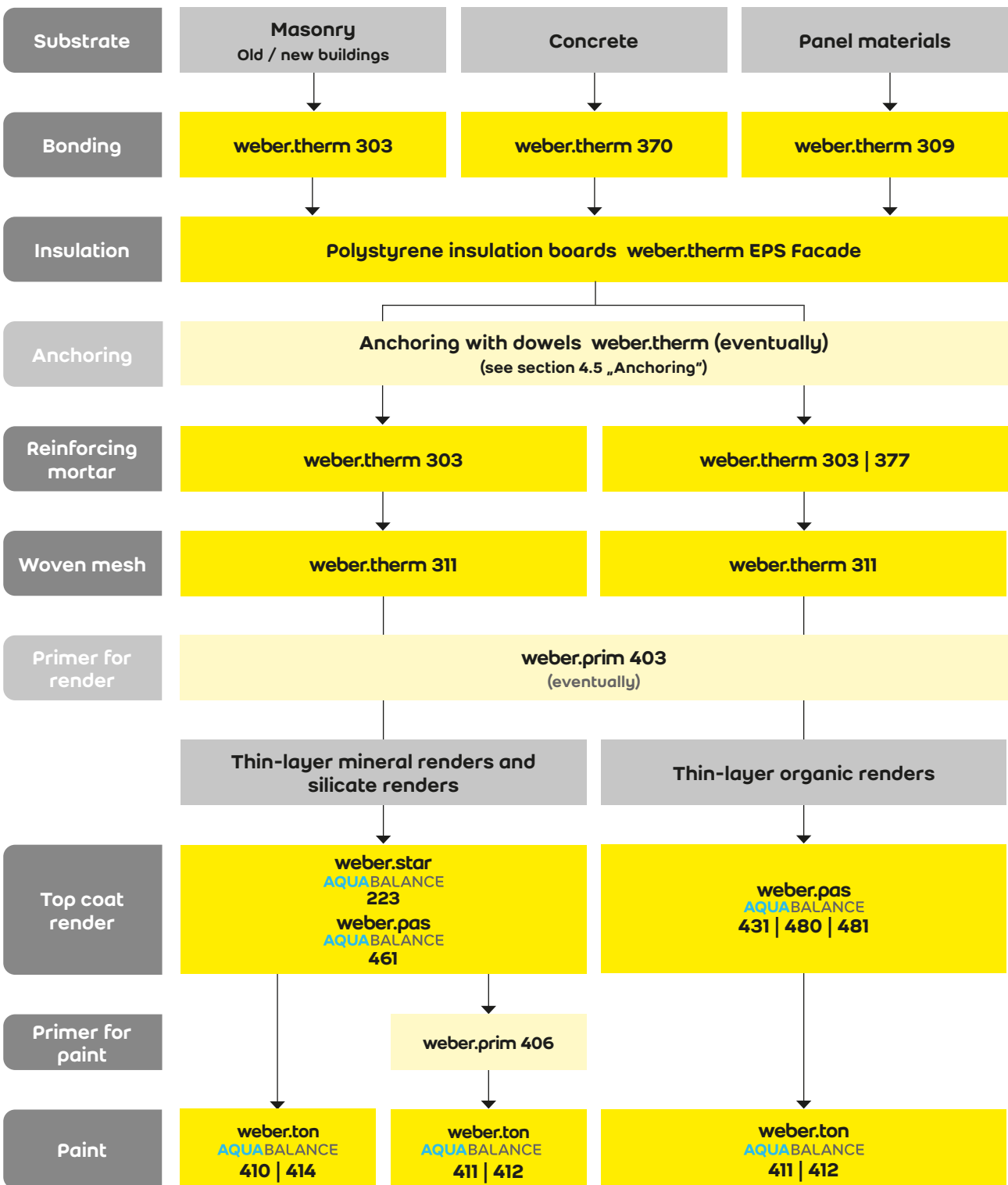


Freestyle special effect render

Mineral modellable render with modern textures (comb or broom texture)



weber.therm B 200



The schematic presentation shows a simplified structure of the system with standard components; it cannot however replace expert advice on site. More extensive information concerning the system components is provided in the technical data sheets.

The type of substrate preparation and/or anchoring must be selected based on the requirements of the construction project. For additional information refer to the technical data sheets and/or request technical advice



Etics with EPS insulation boards and thin-layer build-up

Fields of application

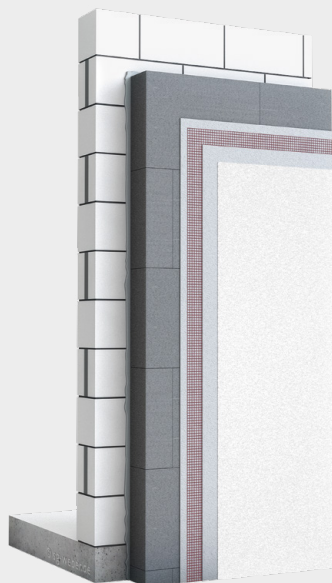
- economical thermal insulation of new and old buildings
- renovation of defective and/or cracked renders on facades

Main features

- thermal insulation polystyrene insulation boards
- thin-layer render build-up
- no necessary anchoring on load-bearing substrates

Consumption / yield

Bonding mortar	weber.therm 303, 370 weber.therm 309	approx. 5.0 kg/m ² approx. 3.0 kg/m ²
Bonding foam	weber.therm 346	
Dowels	weber.therm (in case of non-loading substrates)	at least 4 pieces/m ² *
Reinforcing mortar	weber.therm 303 weber.therm 377	approx. 4.0 kg/m ² approx. 3.0 kg/m ²
Woven mesh	weber.therm 311	approx. 1.1 m ² /m ²
Primer	weber.prim 403 (eventually)	approx. 0,25 l /m ²
Top coat render	refer to technical data sheets	
Socket and perimeter insulation	weber.therm 370	ca. 5.0 kg/m ² (as bonding mortar)



* For full information relative to dowelling technology, number and location of dowels, request technical advice.

1. Range of application

- **weber.therm B 200** is an external thermal insulation composite system (Etics) with expanded polystyrene insulation boards and mineral top coat renders (norm EN 998-1) and organic top coat renders (EN 15824).
- It can be used for the thermal insulation improvement of new and old walls as well as undersides of building parts.
- The system is convenient for the renovation of defective and/or cracked buildings (new and old facades).
- It is suited for the bridging of joints in external walls, in particular within the renovation of large-size elements (maximal length 6.2 meters).
- Furthermore, its use on buildings with a height of max. 22 meters without supplementary dowelling measures (in case of load-bearing substrates) is possible.
- Concrete, masonry, specific panel materials and wood-based materials of timber frame constructions are allowed substrates.

2. Nachweise

- The Etics weber.therm B 200 is approved by the German Building Authorities (DIBt - Deutsches Institut für Bautechnik), which has delivered following approvals:

Z- 33.41-150 – as bonded Etics,

Z-33.43-151 – as bonded and dowelled Etics,

Z-33.47-836 – on panel materials or wood-based materials

Z-33.49-1073 as bonded and dowelled Etics **retec**

- The reaction to fire of the Etics **weber.therm B 200** is B1 (hardly combustible according to DIN 4102).

- Like for all Etics, comply with the national standards and/or guidelines relating to fire resistance (external walls, indoors, socket parts).

- The official approvals are only valid for the whole system. It is not allowed to replace any component of the system. The use of other components, which do not belong to the system, is not permitted; otherwise, the approval is no longer valid and the warranty of the manufacturer is deleted.

3. Product features of Etics components

3.1 Bonding and reinforcing mortars / Bonding foam weber.therm

- bonding and reinforcing mortar **weber.therm 303**
- reinforcing mortar **weber.therm 377**
- PU bonding foam **weber.therm 346**

For bonding insulation boards on non-absorbent substrates (for ex. wood-based materials) use the organic bonding mortar (water-borne dispersion of polymers) **weber.therm 309**. Refer to the technical data sheets.

weber.therm B 200 weber.therm EPS	EPS 035 Facade speedy	EPS 035 Facade standard	EPS 034 Facade speedy	EPS 034 Facade standard	EPS 032e Facade speedy	EPS 032e Facade standard	EPS 031 Facade speedy	EPS 031 Facade standard
Thermal conductivity λ (DIN 4108) W/(m·K)	0.035	0.035	0.034	0.034	0.032	0.032	0.031	0.031
Reaction to fire (DIN 4102-1)	B1	B1	B1	B1	B1	B1	B1	B1
Reaction to fire (DIN EN 13501-1)	E	E	E	E	E	E	E	E
Water vapour diffusion resistance μ	30/70	30/70	20/50	20/50	20/50	20 / 50	20/50	20/50
Dimensions [cm]	100 x 50	100 x 50	100 x 50	100 x 50	100 x 50	100 x 50	100 x 50	100 x 50
Thickness [mm]	40–300	20–300	40–300	20–300	40–300	20–300	40–300	20–300
Coulour	white	white	grey	grey	grey	grey	grey	grey
Acoustic insulation	–	–	–	–	+	+	–	–

3.2 Insulation boards

3.2.1 Polystyrene insulation boards weber.therm EPS

These boards are used on the external walls of facades

3.2.2 Socket polystyrene insulation boards weber.therm EPS 032 / 035 Sockel

These boards have a general approval as perimeter insulation up to 3 meters under final ground level. Their use in pressure water or ground water is not allowed. Take the thermal conductivity additions into account due to ground moisture and non-pressure water.

weber.therm EPS Sockel	EPS 032 Sockel	EPS 035 Sockel
Thermal conductivity λ (DIN 4108) W/(m·K)	0.032	0.035
Reaction to fire (EN 13501-1)	E	E
Water vapour diffusion resistance μ	40/100	40/100
Dimensions [cm]	100 x 50	100 x 50
Thickness [mm]	60–200	60–200

3.3 Woven mesh weber.therm 311 (fine)

The mesh consists of glass fiber with a high tear resistance according to EN 13496 and is treated with an alkali-resistant impregnation.

Tear resistance EN 13496	
When delivered [N/5 cm]	> 2.000
After alkaline stress [N/5 cm]	> 1.000
Weight [g/m ²]	approx. 160
Coulour	wine red

3.4 Dowels weber.therm Dübel

The dowels **weber.therm** are used to ensure stability whenever the substrates have not a sufficient load-bearing capacity.

Plate diameter [mm]	60
Shaft diameter [mm]	8
Anchoring depth (h_{er}) [mm]	25–65, according to substrate type
Reduction of u-value [W/m ² · K]	< 0.002
Use	screw dowels with general technical approval for ensuring the stability

3.5 Universal primer weber.prim 403

The primer is mainly used to regulate the hydrological balance of the thin-layer top coat renders. Moreover, their absorbency is equalized and their adhesion with subsequent products is improved. The primer makes the application of the top coat render easier. It is also possible to pre-treat the reinforced layer by pre-wetting.

3.6 Overlay (top coat) renders

The following top coat renders can be used:

weber.star 223 AquaBalance
special floated render

weber.star 261 AquaBalance
freestyle effect render

weber.pas 461 AquaBalance
silicate render

only in
combination with
weber.therm 303

weber.pas 431 AquaBalance
floated render based on dispersion of polymers

weber.pas 471 AquaBalance
floated render based on siloxane resin

weber.pas 480/481 AquaBalance
floated renders based on silicone resin

Characteristics of mineral top renders (weber.star/weber.top)	
Strength class / mortar group	CS I, CS II / Plc
Compressive strength [N/mm ²]	> 1
Water absorbency coefficient w [kg/m ² · √h]	< 0.5
Water vapour diffusion resistance μ	≤ 20
Binder	white hydrated lime, white cement
Characteristics of organic top renders (weber.pas)	
Water absorbency coefficient w [kg/m ² · √h]:	< 0.5
Water vapour diffusion resistance μ :	60 bis 150
Binder	water-borne dispersion of polymers, water glass (nur weber.pas 460/weber.pas 461 AquaBalance)

The lightness reference value of the top coat renders should be ≤ 20. Additional information is provided in the technical data sheets of the concerned products.

3.7. Accessories

- A number of accessory items are available for correct processing of the whole system:
- **weber.therm 314** thin mesh for corner reinforcement with PVC profile (mesh size 4 x 4 mm)
 - **weber.therm 342** dowel for skirting profile (starting rail)
 - **weber** frame-seal beads for window connections
 - **weber.therm 345** PU foam (resistance to fire B1) for filling small joints between insulation boards
 - **Decorative profiles** for facade design

4. Working instructions

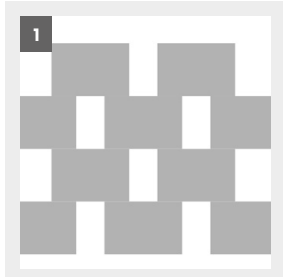
4.1 Preliminary conditions

Respect following demands prior to begin of installation of the Etics:

- The substrate must be load-bearing, sufficiently dry and level. Dirt, dust and loose parts must be removed. Concrete surfaces must be free of residues of separating formwork oil, eventually by removal with steam-blasting.
- The evenness (flatness) of the substrate must comply with the allowed tolerances (variations) defined by the national standards and/or guidelines (for ex. norm DIN 18202 „Tolerances in Building Constructions“). If necessary, take the appropriate remedial measures for levelling unsuitable substrates; in case of doubt request technical advice.
- Horizontal coverings, such as window sills, roof terminations, parapet covers etc. must have been installed.
- Expansion joints of the building structure must be taken over within the whole Etics. Intermediate joints (used for dividing large surfaces into smaller ones) must be installed under consideration of the prevailing facade structure. In all cases expansion joints are to be placed every 30 meters. Their dimensions must be similar in all layers of the system.
- The contractor should report concerns in case of:
 - heavy contamination, efflorescence, excessively smooth surfaces, greater unevenness than allowed by the national guidelines
 - too high building moisture (e.g as a result of moisture-generating finishing works).
- All necessary waterproofing works related to the Etics must be completed prior to its installation.

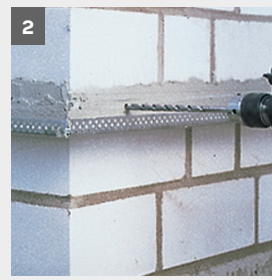
4.2 Preliminary works

- Remove all residues of concrete and mortar.
- Flatness differences of ± 10 mm can be compensated during bonding (± 20 mm in case of additional dowelling).
- Unevenness of more than 10 mm (resp. 20 mm) must first be levelled out with the bonding mortar **weber.therm 300** or the lightweight lime-cement underlay render **weber.dur 132**. Alternative: use the reinforcing mortar **weber.therm 376** or the lightweight lime-cement underlay render with optimized setting and scratching properties **weber.dur 137 SLK**. Allow the levelling layer to dry at least 1 week before bonding insulation boards.
- Carefully check if there are hollow parts within the old renders; if necessary, remove such parts and over-work them (substrate and old render) with the underlay render **weber.dur 132**. Clean substrate and old render, eventually pre-wet them.



- Whenever the old organic paint or render is load-bearing, insulation boards can be glued after substrate cleaning. Whenever these substrates are not load-bearing, their surface must be opened in a checkerboard pattern and removed by at least 70% by steam-blasting or sand-blasting (**drawing 1**).

4.3 Starting rail on the upper socket parts



Two possibilities exist:
 a) Skirting aluminium rail with U-shaped profile: it must match the panel thickness and be fixed with the profile dowels **weber.therm 342** (3 pieces per meter) (**picture 2**). In addition, the skirting rail can be fixed on its whole length with the profile bonding and installation mortar **weber.mix 125**; this is particularly necessary on uneven

substrates, in order to obtain a flush and tight alignment of the lowest (bottom) row. Take care that the rails are not press-fitted due to warmth expansion.

b) Starting rail without profile: fix the ultra-solid mesh for corner reinforcement **weber.therm 312** on the wall with the bonding and reinforcing mortar **weber.therm 303**, on which the insulation boards will be later bonded (**picture 3**).

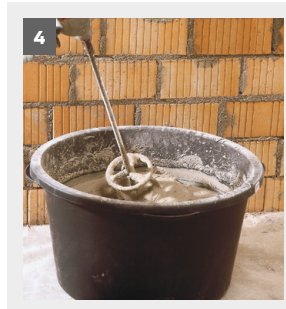


Afterwards place another piece of **weber.therm 312** on the front of the panels, so that the first row of panels is enclosed in a U-shape mesh rail by the above-mentioned reinforcement.

4.4 Bonding of insulation boards

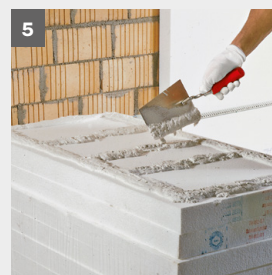
Store the insulation boards away from sun and humidity before use. If the boards are yellowish, remove the coloured and destroyed polystyrene layer.

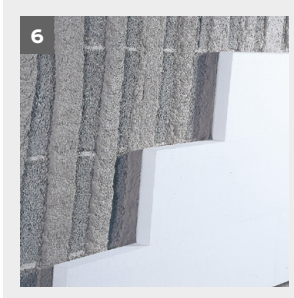
Remove dust from the boards prior to their gluing. Do not install drenched or defective boards.



The bonding and reinforcing mortar **weber.therm 303** is convenient for gluing insulation boards. In case of poorly absorbed substrates (for ex. dense concrete or brickwork) use the bonding mortar **weber.therm 370**. Mix the bag content of the mortar with the specified water quantity, using an electric drill and an appropriate stirrer until the right consistency is obtained (**picture 4**).

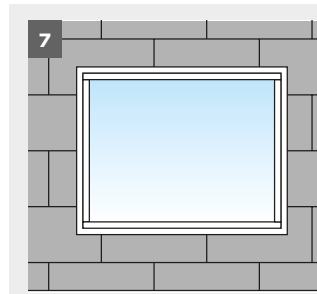
The mortar can also be applied by all conventional render machines (with mixing, conveying and spraying equipment). For the application of the bonding mortar on the insulation boards, a special glue gun can be used, e.g PFT or Putzmeister. In case of boards placed on the lowest row cut off the eventual shiplap edge on the lower longitudinal side; in case of boards placed at the building corner cut off the shiplap edge as mentioned and also at the front sides of the boards. Apply the bonding mortar all around the insulation boards in a frame shape and in 2 - 3 vertical strips on their backside (**picture 5**).





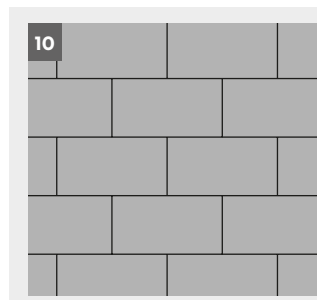
Apply so much mortar that a contact surface with the substrate of at least 50% is obtained after pressing the boards onto the fresh bonding mortar. In case of sufficiently even substrates and in case of insulation boards **weber.therm EPS Facade** speedy the mortar can be mechanically sprayed in 5 cm-width and 1.5 - 2 cm-thickness beads on the walls (**picture 6**).

The distance between the beads should not exceed 10 cm. Immediately after mortar application, position the boards directly without delay (within max. 10 min. after spraying and according to substrate), press them on and float them in using horizontal movements. The bonding of boards always begins at one corner of the building. For reduction of cracks the insulation boards must be de-coupled at the angles of doors and windows, i.e. no joint in-between must be prevailing in the angles (**picture 7**). Whenever the installation of the window sill is not tight against rain, a second waterproofing layer must be planned with the stop-end for window sill **weber.therm Sol Pad** and the 2-comp. waterproofing coating **weber.tec Superflex D 2**. As a rule, a pre-compressed joint sealing tape must be installed in all angles and at all wall openings (doors and windows) between insulation boards and building parts (**picture 8**).



Do not put mortar into the joints between the boards so as to avoid thermal bridges. Even in case of correct processing, it is not always possible to avoid joints in such areas. Fill the joints with the same insulation material and the thin joints (max. 1 cm) with the PU foam **weber.therm 346** (**picture 9**).

Align all insulation boards plumb and flush with a straight edge. All further boards are laid butt-joint (i.e. without joint in-between) in successive rows and with a general offset of at least 25 cm (**picture 10**). Also, at the building corners the boards are laid offset; in this case their edge must be protruding over the building corner by the board thickness and the thickness of the mortar bed (**picture 11**).



Etics with EPS insulation boards and thin-layer build-up

4.5 Anchoring

After a drying time of at least 3 days the works for the reinforcement layer and the dowelling can begin. In case of load-bearing substrates (for ex. new buildings) a dowelling is not necessary. In case of paint residues or organic renders

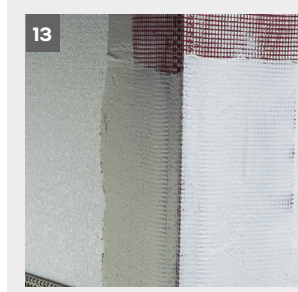
on the substrate install the drive-in dowels **weber.therm Schlagdübel** (at least 4 pieces per m²). If the stability cannot be obtained in case of non-load-bearing substrates, use the approved screw dowels **weber.therm Schraubdübel** (**picture 12**). Always plan 4 dowels/m² in case of timber substrates.

For full information relating to number and location of dowels, request technical advice.

weber.therm SLD-5
(drive-in dowel, flush with insulation boards)

4.6 Design of corners and profiles

Install the thin mesh for corner reinforcement with PVC profile **weber.therm 314** at the corners of the building and the windows with the reinforcing mortar (**picture 13**). For prevention of cracks in angles pieces of woven mesh cut to size (approx. 60 x 25 cm) must also be embedded in the layer of reinforcing mortar (**picture 14**).





Etics with EPS insulation boards and thin-layer build-up

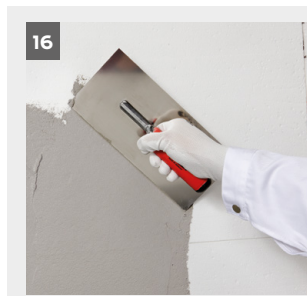
Facade / Wall



15 Install a transition between window frame and render with an appropriate frame-seal bead with glass fiber mesh flag, such as **weber.therm Gewebearputzleite** (picture 18).

4.7 Reinforcing works

Protect the glued boards from sun. In case of yellowish parts remove the destroyed layer and sweep dust before starting bonding. Mix the bonding and reinforcing mortar as described above. It is applied on the insulation boards in a thick layer and ruled level (picture 16).



Afterwards lay the woven mesh **weber.therm 311** (fine) in vertical or horizontal wrinkle-free strips across the whole surface. The strips must overlap by at least 10 cm (picture 17). Gently press the mesh with a flat trowel. Afterwards the mesh must lie in the upper half of the reinforcing mortar layer.

Combinations woven mesh / reinforcing mortar		
	weber.therm 303	weber.therm 377
weber.therm 311	+	+
Thickness of reinforcement layer	3 mm	3 mm



18 Pay attention that the overlapping mesh strips do not coincide with other mesh reinforcements in the angles around windows and other wall openings. The mesh is brought flush to the corners of the building. Rule level the layer of reinforcing mortar to a flat, rough and in-plane surface with a wooden float (do not smooth it). During these operations it is neither allowed to let a sinter skin deposit (picture 18). A separation between reinforcing mortar and window sill must be carried out.

Window reveals, decorative offset frames and jambs, and render strips

For window reveals, decorative offset frames and jambs, and render strips we recommend to use the lightweight mineral fine-grained top coat render **weber.star 261 AquaBalance** in 2 - 3 mm thickness on the reinforcing mortar. Without delay work to a floated or smooth finish. After sufficient drying, apply the silicate paint **weber.ton 410 AquaBalance**.

Fire protection

a) Fire scenario in the socket parts



19 With effect from 2016 in Germany, the fire safety requirements were extended to include the so-called „socket fire scenario“. According to these regulations all Etics based on EPS, whatever the insulation thickness is, supplementary measures must be taken to protect the facade from the external side (e.g burning waste container).

For all insulation thicknesses the regulations require one additional fire barrier of mineral wool lamella (socket fire bar), one additional fire barrier between floor slab on ground floor and 1st floor, one additional fire barrier between 2nd and 3rd floor as well as one fire barrier at the top. It is mandatory to strictly follow the national guidelines relating to fire protection.

b) Fire scenario in living room

As before, measures are also required for Etics with EPS insulation thickness > 100 mm, fire barriers should be installed to prevent the spread of fire inside the living rooms through windows and doors on the facade. For the fire protection there are 2 options.

Option 1:

Reinforcement of window lintels with mineral wool lamella

A fire barrier with mineral wool lamella boards is arranged over each opening (picture 19). The boards should be at least 20 mm high and be placed at least 30 cm beyond the reveal side.

Option 2:

Mineral wool lamella boards as all around fire barrier

A fire barrier is arranged horizontally every second storey all around the building.

4.8 Overlay (top coat) renders

Respect a drying time of at least 7 days after application of the reinforcing mortar and prior to application of the overlay renders. Depending on climatic conditions and type of finish top coat, the reinforced layer can be pre-wetted (preferably the day before). Alternatively, the universal primer **weber.prim 403** can be applied in case of thin-layer overlay renders. The overlay render can be applied by hand or appropriate render machine. Respect the instructions in the technical data sheets for the application of overlay renders.

Following paints are used in accordance with the instructions in the technical data sheets. In case of through-coloured, mineral and silicate thin-layer overlay renders, one coat of paint, for ex. **weber.ton 414 AquaBalance** is recommended to compensate colour differences.

In case of mineral and silicate thin-layer overlay renders **weber.star/weber.pas 460 AquaBalance/461 AquaBalance** can be used only in combination with **weber.therm 303**.

4.9 Perimeter insulation and socket part insulation

Perimeter and socket building parts are subject to higher mechanical and moisture loads; for their insulation other materials fulfilling these demands in the long term must be taken into consideration. In general, following alternatives for the insulation design of these areas are possible:

- The socket part is not deep under the ground level (**drawing 20**)
- The socket insulation is brought downwards as perimeter insulation (**drawing 21**).

Conditions

- The Etics has no waterproofing function.
- The necessary vertical and horizontal waterproofing must have been carried out.
- Precipitation water must be diverted from the facade by taking appropriate measures (for ex. installation of capillary layer or permeable gravel bed). The paving stones and slabs around the building must be laid with a sufficient slope and be separated from the building so as to facilitate the water drainage.

Bonding of insulation boards

The socket polystyrene insulation boards **weber.therm EPS Sockel** are bonded with the system-compliant mortar or (in the case of bitumen waterproofing on the socket part) with the bonding mortar **weber.therm 370**, applied around the board and in 3 vertical beads on its backside. Apply so much mortar that a contact surface with the substrate of at least 50% is obtained after pressing the boards.

The insulation boards located in the earth are glued in dots (at least 6 dots per panel). Use the drive-in dowels **weber.therm Schlagdübel** (4 pieces/m²) on the bitumen-covered parts above ground level so as to prevent the boards from sliding during the backfilling work. If the socket part is not deeply located in the ground, cut the board at a 45° angle at its low side.

Reinforcing mortar for areas with low impact

After hardening of the bonding mortar, apply a reinforcement layer with the bonding and reinforcing mortar **weber.therm 303** + woven mesh as described above.

This layer is brought up to approx. 30 cm below the intended final ground level (case b) or on the substrate (case a).

Reinforcing mortar for areas with high impact

After sufficient hardening of the pre-said first reinforcement layer apply a second one with **weber.therm 304**, if higher mechanical loads are expected. Alternative: mineral building panels can be installed on the perimeter insulation boards, prior to application of the reinforcement layer. Also, the bonding of ceramic clinker brick slips or tiles on the first reinforcement layer is another possibility.

Overlay (top coat) renders

Next day apply a layer of the bonding and reinforcing mortar **weber.therm** as overlay render, rule level and texture to a smooth finish. Alternative: after drying of the reinforcement layer apply the lime-cement render **weber.star 295** in approx. 5 mm thickness. After drying of the previous render layer, it is recommended to reinforce its hydrophobic behaviour in the upper socket parts (facade parts above ground level) by applying the silicate resin paint **weber.ton 410 AquaBalance** or the silicone resin paint **weber.ton 411 AquaBalance**.

Instead of **weber.star 295**, the organic top render with exposed natural stones **weber.pas 434** can be used in the socket parts after treatment with the universal primer **weber.prim 403**. Alternative: in case of low loads on the facade socket parts, an organic render can be also used (**weber.pas 431/471/480/481 AquaBalance**). In the earth-contacting building parts apply the flexible waterproofing coating **weber.dur 126** (1-comp.) or **weber.tec Superflex D 2** (2-comp.).

Beforehand roll out a protection and drainage mat (for ex. **weber.sys 983**) or a drainage board so as to protect earth-contacting surfaces from loads and damages during the backfilling of the excavation pit.

Comply with the national standards and/or guidelines relating to all works described in this document; if necessary, request technical advice.

