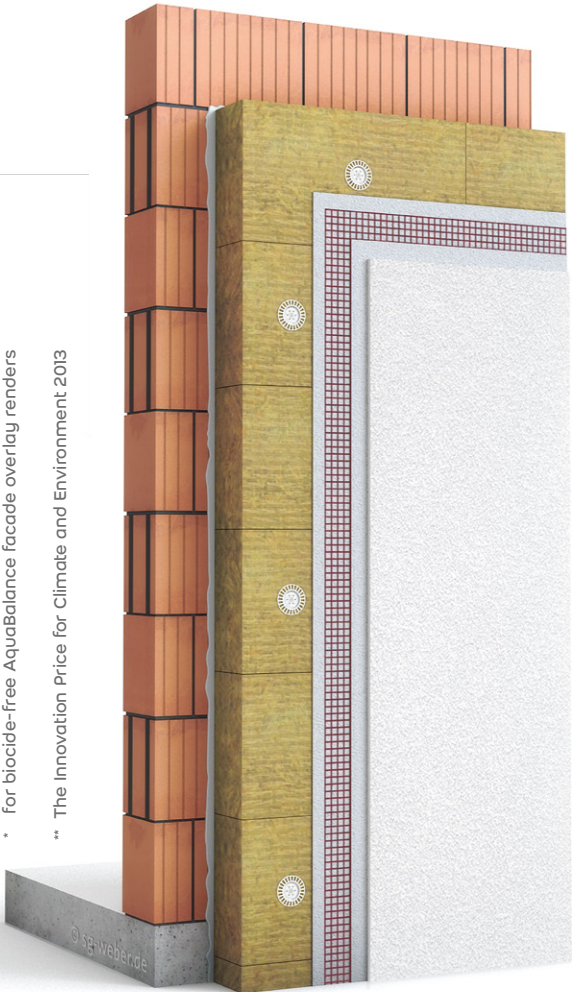


Etics weber.therm A 100

Premium Etics with mineral wool insulation boards and mineral overlay renders



- Non-combustible
- High-quality mineral thin- or thick-layer top coat renders
- With AquaBalance technology: particularly resistant to algae and fungi growth



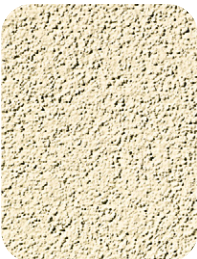
Scratch render fine-grained
Mineral scratch render with a fine-grained texture.
Grain size: 1.0–2.0 mm



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



Floated render
Mineral floated render with a lively and granular texture.
Grain size: 1.5–3.0 mm



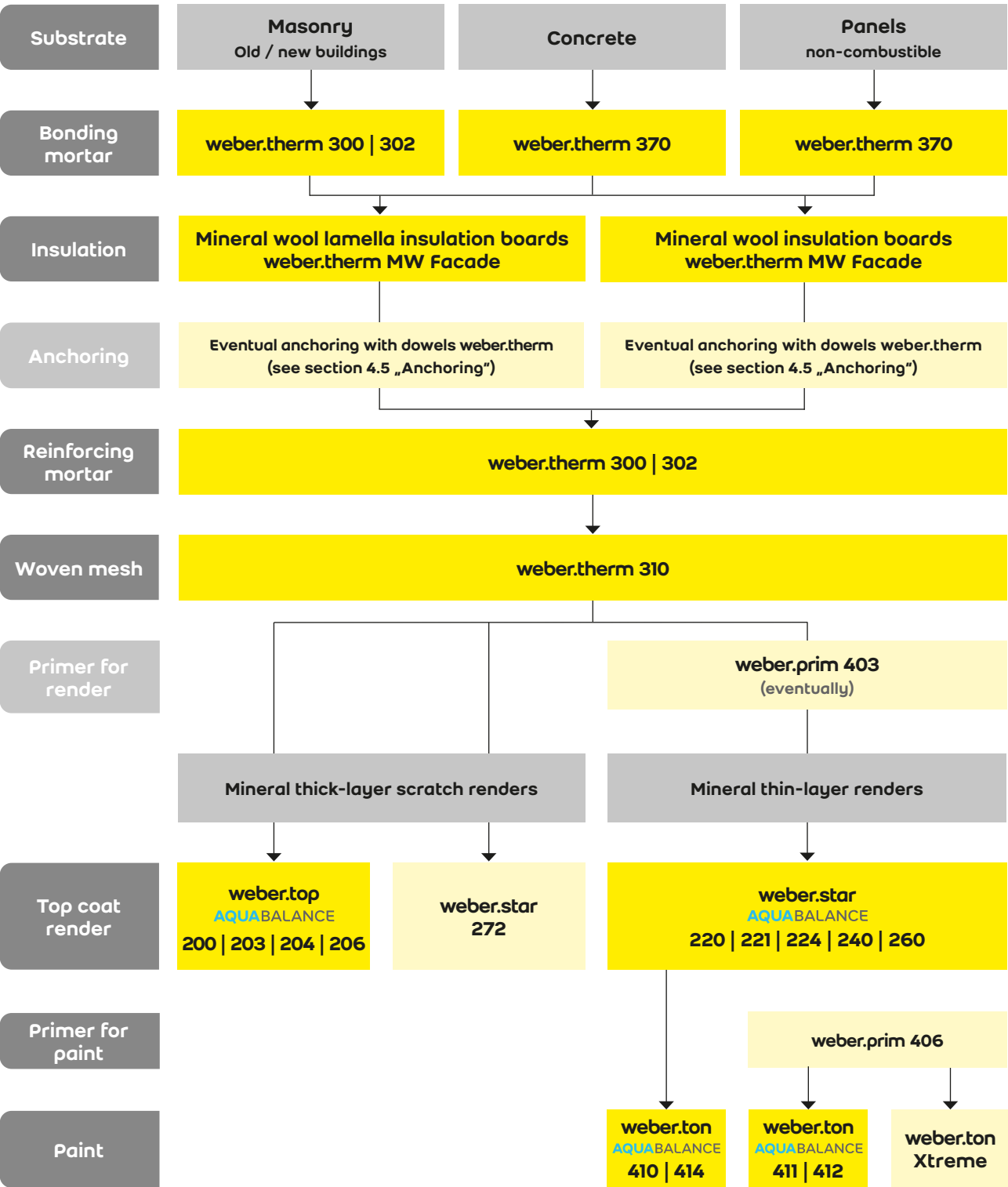
Smoothed render
Mineral render with a fine-grained and smooth surface



Throw-on render
Mineral render with expressive throw-on textures



weber.therm A 100



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 mineral wool lamella or mineral wool insulation boards and selected mineral overlay renders

Fields of application

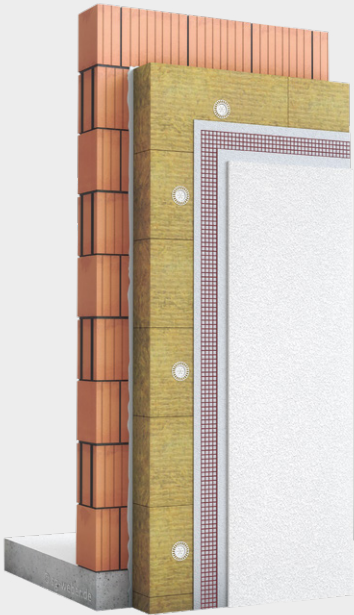
- non-combustible thermal insulation, in particular for hospitals and schools
- renovation and drying-out of old facades
- thermal insulation of new and old buildings

Main features

- high permeability to diffusion of water vapour
- highest reaction to fire - class A1: non-combustible
- best fire resistance and acoustic protection

Consumption / yield

Bonding mortar	weber.therm 300/370	approx. 5.0 kg/m²
Dowels	weber.therm	at least 3 pieces/m²*
Reinforcing mortar	weber.therm 300	approx. 7.0 kg/m²
Woven mesh	weber.therm 310	approx. 1.1 m²/m²
Primer	weber.prim 403 (eventually)	approx. 0.25 l/m²
Top coat render	refer to technical data sheets	
Socket and perimeter insulation	weber.therm 370	approx. 5.0 kg/m² (as bonding mortar)



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

1. Range of application

- **weber.therm A 100** is an external thermal insulation composite system (Etics) with mineral wool insulation boards and mineral top coat renders (EN 998-1).
- It is used to improve the thermal insulation of old and new walls of buildings and/or undersides of building parts.
- The system is allowed for buildings with a height of max. 100 m. It is particularly suitable for facade insulation of buildings for which non-combustibility is required (e.g., hospitals, schools etc.).
- It can be also used for the renovation of defective and/or cracked new and old facades.
- Furthermore, it is suited for the bridging of joints in external walls, in particular within the renovation of large-size concrete elements (maximal length 6.2 m).
- Concrete and masonry are allowed substrates.

2. Homologations

- The Etics **weber.therm A 100** is approved by the German Building Authorities (DIBt - Deutsches Institut für Bautechnik), which has delivered following approvals:
Z-33.44-63 – as bonded Etics / mineral wool lamella boards
Z-33.43-151 – as bonded and dowelled Etics
Z-33.49-1073 - as bonded and dowelled Etics **retec**
- The reaction to fire of the Etics **weber.therm A 100** is classified BI (non-combustible according to DIN 4102).
- Like for all Etics, comply with the national standards and/or guidelines relating to fire resistance (external walls, indoors rooms, 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 weber.therm

- **bonding and reinforcing mortars weber.therm 301/302**
- **bonding mortar weber.therm 370**

Refer to the technical data sheets.

weber.therm A 100 weber.therm MW	MW 041 Facade speedy	MW 035 Facade express	MW 035 Facade speedy	MW 035 Facade standard
Thermal conductivity λ (DIN 4108) W/(m·K)	0.041	0.035	0.035	0.035
Class of reaction to fire (EN 13501-1)	A1	A1	A1	A1
Water vapour diffusion resistance μ	1	1	1	1
Dimensions [cm]	120 x 20	80 x 41.5	120 x 40	80 x 62.5
Thickness [mm]	40–400	60–240	80–240	80–240

3.2 Insulation boards

- 3.2.1 Lamella/mineral wool insulation boards **weber.therm MW**
 - 3.2.2 **weber.therm FG 039 Sockel standard**
- The socket board **weber.therm FG 039 Sockel standard** has a general approval as non-combustible insulation of the socket part. It is glued with the system-compliant adhesive (2-comp. solvent-free reactive adhesive PC® 56) and mechanically fastened with the screw dowels **weber.therm Schraubdübel SDR-5** above ground level. Afterwards apply a reinforcement layer with the lightweight bonding and reinforcing mortar **weber.therm 307** and the woven mesh **weber.therm 310** (coarse).

weber.therm FG 039 Sockel	Sockel
Thermal conductivity λ (DIN 4108) W/(m·K)	0.039
Class of reaction to fire (EN 13501-1)	A1
Water vapour diffusion resistance μ	∞
Dimensions [cm]	60 x 45
Thickness [mm]	60–180

3.3 Woven mesh weber.therm 310 (coarse)

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

Tear resistance when delivered [N/5 cm]	> 2.000
Tear resistance after alkaline stress [N/5 cm]	> 1.300
Weight [g/m²]	approx. 200
Mesh size [mm]	approx. 8 x 8
Colour	wine red

3.4 Dowels weber.therm

The dowels **weber.therm** are used to ensure stability in case of mineral wool boards **weber.therm Mineralwool-Dämmplatten**. They are also used in case of mineral wool lamella boards **weber.therm Mineralwool-Lamelle** when the substrates have not a sufficient load-bearing capacity.

Plate diameter [mm] (with additional disc)	60 resp. 90 or 140
Shaft diameter [mm]	8
Anchoring depth (h_{ef}) [mm]	25–65, according to substrate type
Reduction of u-value [W/m² · 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 reinforcement layer by pre-wetting.

3.6 Overlay (top coat) renders

The following mineral renders can be used:
weber.top 200/203/204/206 AquaBalance scratched renders
weber.star 220/221*/224 AquaBalance floated renders
weber.star 240 AquaBalance rilled render
weber.star 260 AquaBalance smoothed render (freestyle effect render upon request)

Characteristics of mineral top coat renders	
Strength class / mortar group	CS I bzw. CS II/Plc
Compressive strength [N/mm²]	> 1
Water absorbency coefficient w [kg/m² · √h]	< 0.5
Water vapour diffusion resistance μ	≤ 20
Class of reaction to fire (EN 13501-1)	A1
Binder	white hydrated lime, white cement

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.

* in combination with the bonding mortar **weber.therm 370** (class of reaction to fire A2)

3.7 Accessories

- A number of accessory items are available for correct processing of the whole system:
- **weber.therm 312** ultra-solid mesh for corner reinforcement (6 x 10 mm)
 - **weber.therm 313** coarse mesh for corner reinforcement with PVC profile (mesh size 8 x 8 mm)
 - **weber.therm 315** arrow-shaped glass fiber element for diagonal reinforcement of angles (33 x 40 cm)
 - **weber.therm 342** dowel for skirting profile (starting rail)
 - **weber.therm 345** PU foam (reaction to fire BI) for filling small joints between insulation boards
 - **Frame-seal beads** for window connections
 - **Decor profiles** for facade design
 - **Render profiles** for corners and stop-ends

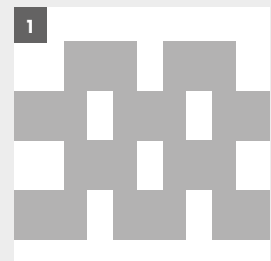
4. Working instructions

4.1 Preliminary conditions

- Respect following demands prior to the 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 be 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.



connectors **weber Sockelverbinder** (delivered in the kit **weber.therm Befestigungsset**).

- Whenever the 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**).
- Use the primer (silicate fixative) **weber.prim 406** on very absorbent substrates.

4.3 Starting rail

There are two possibilities for installation of the starting rail on the socket parts above ground level:

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 m) (**pic 2**) and installed with the skirting rail

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 mortar **weber.therm 300**, with 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 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 humidity before use. Do not install drenched or defective boards. The bonding of the insulation boards is carried out with the bonding and reinforcing mortar **weber.therm 300**. In case of poorly absorbent substrates (for ex. dense concrete or clinker) 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**).



It can also be applied by all conventional render machines (with mixing, conveying and spraying equipment). For application of the bonding mortar on the insulation boards, a special glue gun can be used, e.g. PFT or Putzmeister. Apply the bonding mortar all around the insulation boards **weber.therm MW 035 Facade express** and **MW 035 Facade standard** in a frame shape and in 2 - 3 vertical strips on their backside (**picture 5**).



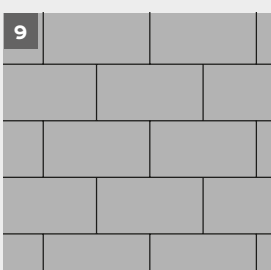
Apply so much mortar that a contact surface of the mortar with the substrate of at least 50% is obtained after pressing the boards onto the fresh bonding mortar. For a quicker installation the mortar can be mechanically sprayed in 5 cm wide and 1.5-2 cm thick beads on the walls



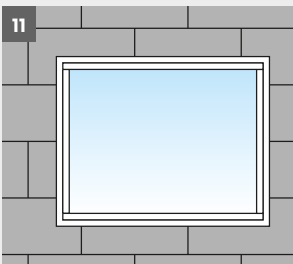
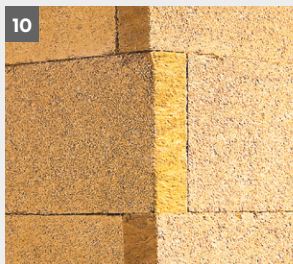
(**picture 6**; **weber.therm MW 041 / 035 Facade speedy** and **MW 035 Facade express**). The distance between the beads should not exceed 10 cm. A contact surface of the mortar with the substrate of at least 50% must be obtained.



Alternative: the mortar can be sprayed full-surface and combed with a notched trowel (10 x 10 mm). Immediately after its application, position the boards without delay (within max. 10 minutes after spraying or less according to substrate and climatic conditions), press on and float them in using horizontal movements (**picture 7**) In case of mineral wool lamella insulation boards **weber.therm MW 041 Facade speedy** the bonding mortar is applied full-surface onto the lamella boards (**picture 8**).



The bonding of boards always begins at one angle of the lowest part of the facade. All further boards are laid buttjoint (i.e. without joint in-between) in successive rows (**drawing 9**). Also at the angles the boards are laid offset; in this case the board edge must protrude over the building angle by the board thickness and the thickness of the mortar bed (**pic. 10**).



For reduction of cracks the insulation boards (except lamella boards) must de-coupled at the angles of openings (doors and windows), i.e. no joint in-between must be prevailing in the angles (**drawing 11**).

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 openings (doors and windows) between insulation boards and building parts (**picture 12**).

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 345** (**picture 13**).



Etics with mineral wool lamella or mineral wool insulation boards and selected mineral overlay renders

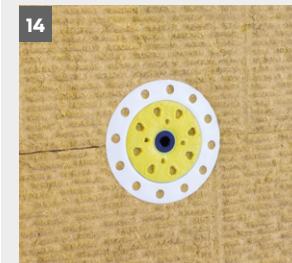
4.5 Anchoring

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) and in case of the mineral wool lamella boards **weber.therm MW 041 speedy** a dowelling is not necessary. The mineral wool insulation boards **weber.therm MW 035 Facade express**, **weber.therm MW 035 speedy** and **035 Facade standard** must be anchored with the approved dowels **weber.therm**.

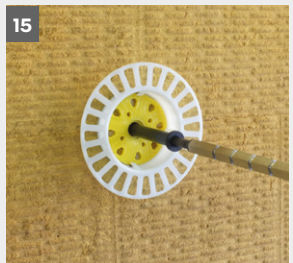
According to their type the boards must be dowelled as follows:

insulation board weber.therm	Diameter of dowel plate [mm]	Dowelling under woven mesh	Dowelling through woven mesh
MW 041 Facade speedy	60 mm		x
	140 mm	x	
MW 035 Facade express/ MW 035 Facade speedy/ MW 035 Facade standard	60 mm		
	≥ 90 mm	x	
	112 mm, countersunk	x	

When dowelling through the woven mesh the dowels must be installed immediately after the mesh has been laid. The mortar is not allowed to stiffen. Afterwards the dowel heads are covered with the reinforcing mortar.



Pic. 14: **weber.therm SRD-5** with 90 mm additional disc (flush with insulation)

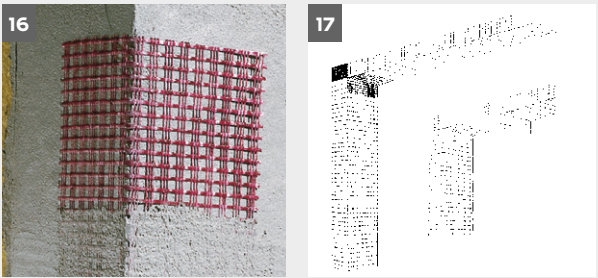


Pic. 15: **weber.therm SRD-5** with 112 mm additional disc (countersunk)

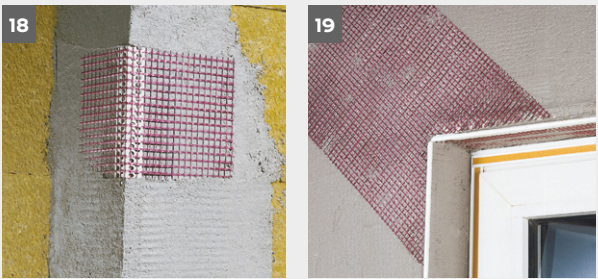


Etics with mineral wool lamella or mineral wool insulation boards and selected mineral overlay renders

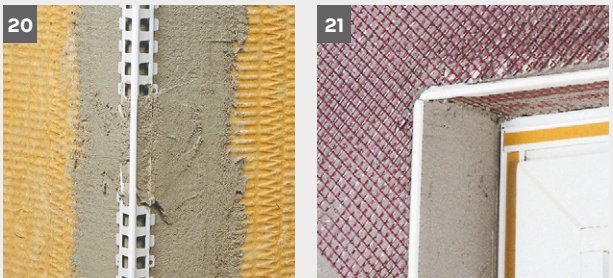
4.6 Design of corners and profiles



Install the ultra-solid mesh for corner reinforcement **weber.therm 312** with the bonding and reinforcing mortar (picture 16). For prevention of cracks in angles in the areas of window sills, window lintels and other wall openings, cut **weber.therm 312** to the required dimensions and glue it with the reinforcing mortar (picture 17) on the insulation boards.



Alternative: the coarse mesh for corner reinforcement with PVC profile **weber.therm 313** must be fixed with the bonding and reinforcing mortar at the angles (picture 18). For prevention of cracks in angles the arrow-shaped glass fiber element for diagonal reinforcement of angles **weber.therm 315** or a piece of woven mesh cut to required dimensions (approx. 60 x 25 cm) are embedded in the reinforcement layer (picture 19).



In addition, a piece of the ultra-solid mesh for corner reinforcement **weber.therm 312** must be added inside the door reveal, in order to obtain a full-length reinforcement there, too. Render profiles are fixed with the mortar **weber.mix 125** under consideration of the thickness of the chosen render system either directly onto the ultra-solid mesh for corner reinforcement **weber.therm 312** or on the reinforcement layer (picture 20). Install a transition between window frame and render with an appropriate hard PVC-profile with glass fiber mesh flag, such as **weber.therm Gewebearputzleiste** (picture 21).

4.7 Reinforcing works

Protect the glued boards from too heavy humidity ingress. Mix the bonding and reinforcing mortar as described above. It is applied on the insulation boards and ruled level (picture 22).



Then lay the woven mesh **weber.therm 310** in vertical or horizontal wrinkle-free strips across the whole surface. Gently press the mesh with a flat trowel. The strips must overlap by at least 10 cm (picture 23).



The mesh must lie in the upper half of the reinforcement layer.

Pay attention that the overlapping mesh strips do not coincide with other mesh reinforcements in corner areas of windows and other wall openings. At the corners of the building, the mesh is brought flush up to the corners. In case of thick-layer overlay renders (range of scratch renders **weber.top**) roughen the reinforcing mortar, using for ex. a hard broom (picture 24). In case of other overlay renders rule level the mortar to a flat, rough and in-plane surface with a wooden float (do not smooth it).



Combination woven mesh / reinforcing mortar	
	weber.therm 300
weber.therm 310	+
Thickness of reinforcement layer	5-8 mm

During these operations it is neither allowed to expose the woven mesh nor to let a sinter skin deposit (picture 25). A separation between reinforcing mortar and window sill must be carried out. Plan appropriate joints for separation of adjacent building parts from the built-in render system.



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

For the design of window reveals, decorative offset frames and jambs, and render strips use the lightweight mineral fine-grained top coat render **weber.star 261 AquaBalance** in 2 - 3 mm thickness on the reinforcement layer. Without delay work to a floated or smoothed texture. After sufficient drying, apply the silicate paint **weber.ton 410 AquaBalance**.

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 reinforcement layer can be pre-wetted (preferably the day before). Alternative: 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 specific instructions in the technical data sheets for the application of overlay renders and paints.

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.

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:

- a) The socket part is not deep under the ground level (drawing 26).
- b) The socket insulation is brought downwards as perimeter insulation (drawing 27).

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 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**; it is 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 palm-sized dots per panel). Use the drive-in dowels **weber.therm Schlagdübel** (4 pieces per sqm) 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 earth, cut the board at a 45° angle at its low side.

Reinforcement layer for areas with low impact

After hardening of the bonding mortar, apply a reinforcement layer with the bonding and reinforcing mortar **weber.therm 300** + woven mesh as described above. This layer is brought up to approx. 30 cm below the expected 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, if higher mechanical loads are expected. Alternative: mineral building boards can be installed on the perimeter insulation boards, prior to application of the reinforcement layer. Also, the bonding of ceramic clinker slips (facing brickwork) on the first reinforcement layer is another possibility. For more information refer to the application tip „Execution of socket and perimeter areas in case of ETICS“.

Overlay (top coat) renders

Next day apply a **weber.therm** overlay render, rule level and texture to a smooth finish. Alternative: after drying of the reinforcing mortar apply the lime-cement render **weber.star 295** in approx. 3 - 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**.

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**).

Instead of **weber.star 295**, the organic top coat render with exposed natural stones **weber.pas 434** can be used in the socket parts. after treatment with the universal primer **weber.prim 403**. On 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.

