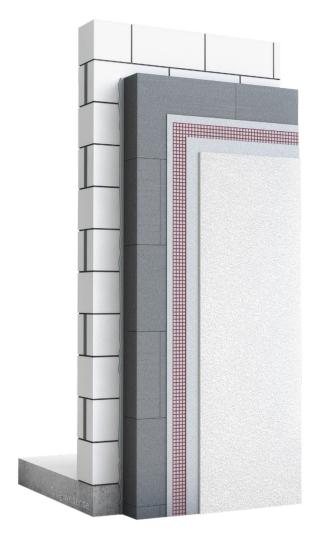
Facade / Wall

Etics weber.therm B 100

Etics weber.therm B 100

Solid and thick-layer render systems on polystyrene insulation boards



- Non-combustible
- Widest range of high-quality top coat renders
- With AquaBalance technology: particularly resistant to algae and fungi growth

Scratch render fine-grained

Mineral scratch render with a finenoble and finegrained surface 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

Lively and granular floated finish with a grain-to-grain texture. As mineral or organic render. Grain size: 1.5–3.0 mm



Smoothed render

Mineral render with a fine-grained and smooth surface

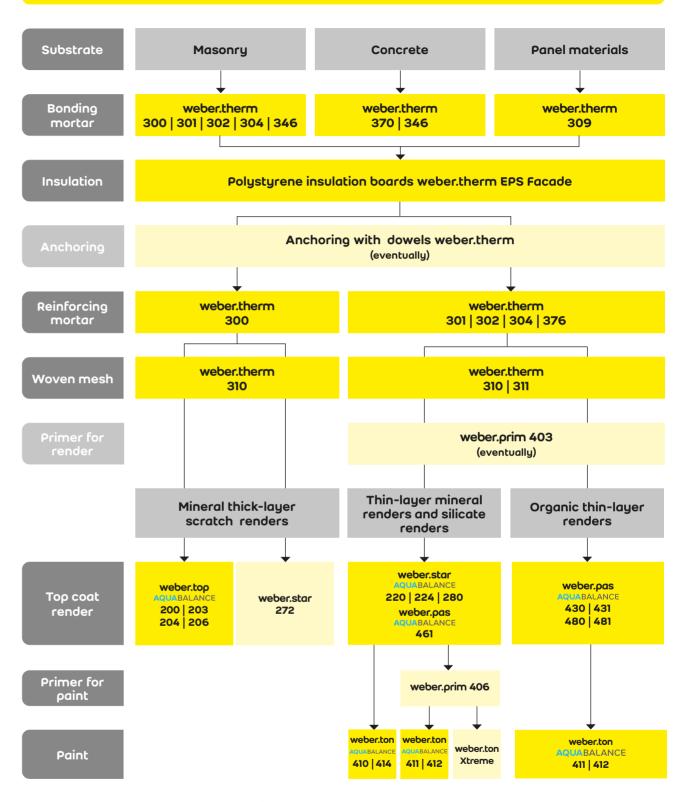


Combed render

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



weber.therm B 100



This 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 weber.therm B 100

Fields of application

Consumption / yield

Main features

Bonding mortar

Bonding foam

Woven mesh

Top coat render

Socket and

Primer

Reinforcing mortar

economical thermal insulation of new and old buildings

no necessary anchoring on load-bearing substrates

suitable with insulation boards > 100 mm without fire barriers

weber.therm 300, 301, 370

non-loading substrates)

weber.therm 300, 301

weber.therm 302

weber.therm 376

webertherm 370

* With regard to dowel selection and the basics of anchoring technology,

see pages dowel technology - dowel quantities - dowel scheme

weber.therm 310/311

weber.prim 403 (eventually)

refer to technical data sheets

webertherm 302

weber.therm 309

weber.therm 346

· renovation of defective and/or cracked renders on facades

· solid, thick-layer and mineral top coat render on polystyrene insulation

system (Etics) with polystyrene insulation boards and with mineral

weber.therm B 100 is an external thermal insulation composite

top coat renders (norm EN 998-1) or organic top coat renders

• 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 meters).

· The system is allowed for buildings with a height of max. 22 meters without supplementary dowelling measures (in case of load-bearing substrates).

buildings and/or undersides of building parts.

· Concrete, masonry and specific boards, timber constructions are allowed substrates.

2. Homologations

1. Range of application

Etics with EPS insulation boards with thick-layer and mineral render set-up

approx. 4.5 kg/m²

approx. 4.0 kg/m²

approx. 5.0 kg/m²

approx. 3.0 kg/m²

approx. 7.0 kg/m²

αρριοχ. 5.7 kg/m²

approx. 5.3 kg/m²

approx. 15.0 kg/m²

approx. 1.1 m²/m²

approx. 0.25 l/m²

approx. 5.0 kg/m²

at least 4 pieces./m²

• The Etics weber.therm B 100 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 large-size concrete elements and timber constructions

Z-33.49-1073 as bonded and dowelled retec Etics

- · The Etics weber.therm B 100 has a reaction to fire B1 (non-combustible according to DIN 4102).
- · Like for all Etics, comply with the national standards and/or guidelines relating to resistance to fire (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 / bonding foam weber.therm
- bonding and reinforcing mortars weber.therm 300/301/302
- lightweight bonding and reinforcing mortar weber.therm 304 (clean/speedy)

Use the organic bonding mortar (water-borne dispersion of poly-

mers) weber.therm 309 according to EN 15824 in case of non-

• PU bonding foam weber.therm 346

absorbent substrates.

makes the application of the top coat render easier. It is also

EPS 034 EPS 031**** veber.therm B 100 weber.therm EPS Thermal conductivity λ 0.035 0.035 0.034 0.034 0.032 0.031 0.031 0.032 (DIN 4108) W/(m·K) Class of reaction to fire (DIN 4102-1) B1 B1 B1 B1 B1 R1 R1 B1 Class of reaction to fire (EN 13501-1) F F F Ε F F F F Water vapour diffusion 30/70 20/50 20/50 21/50 30/70 20/50 20/50 20/50 resistance coefficient µ Dimensions [cm] 100 x 50 101 x 50 Thickness [mm] 40-300 20-300 40-300 20-300 40-300 20-300 40-300 20-300 white white Colour grey grey grey grey grey grey Acoustic insulation

- * In case of thick-layer mineral renders weber too the insulation thickness must be < 100 mm
- ** In case of thick-layer mineral renders **weber.top** the insulation thickness must be ≤ 200 mm

3.2 Insulation boards

3.2.1 Polystyrene boards weber.therm EPS

These boards are used on the external walls of facades.

3.2.2 Polystyrene boards for socket parts weber.therm EPS 032/035 Sockel

These boards have a general approval as perimeter insulation up to 3 m under final around level. Their use in pressure water or around water is not allowed. Take the thermal conductivity additions into account due to around 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
Class of reaction to fire (EN 13501-1)	E	E
Water vapour diffusion resi- stance coefficient µ	40/100	40/100
Dimensions [cm]	100 x 50	100 x 50
Thickness [mm]	60-200	60-200

3.3 Woven meshes weber.therm 310 (fine) / 311 (coarse)

Both meshes consist of glass fiber with a high tear resistance according to EN 13496 and treated with an alkali-resistant impregnation.

	weber.therm 310	weber.therm 311
Tear resistance when delivered [N/5 cm]	> 2.000	> 2.000
Tear resistance after alkaline stress [N/5 cm]	> 1.300	> 1.000
Weight [g/m²]	арргох. 200	арргох. 160
Mesh size [mm]	арргох. 8 х 8	арргох. 4 х 4
Colour	wine red	wine red

3.4 Dowels weber.therm

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 _{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 in case of non load- bearing substrates

3.5 Multi-use weber.prim 403

The primer is mainly used to regulate the water balance of the thinlayer top coat renders. Moreover their absorbency is equalised and their adhesion with subsequent products is improved. The primer possible to pre-treat the reinforced 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 220/221/223/224 AquaBalance floated renders

weber.star 240 AquaBalance rilled render

weber.star 261/280 AquaBalance freestyle effect renders

Moreover following silicate or organic renders can be used:

weber.pas 431 AquaBalance

floated render based on dispersion of polumeres

weber.pas 461 AquaBalance floated render based on silicate resin weber.pas 471 AquaBalance floated render based on siloxane resin weber.pas 480/481 AquaBalance floated renders on silicone resin

Etics weber.therm B 100

Wall

Facade

Characteristics of mineral top renders (weber.star/weber.top)				
Strength class / mortar group	CS I resp. CS II / Plc			
Compressive strength [N/mm²]	>1			
Water absorption coefficient w [kg/m²⋅√h]:	< 0.5			
Water vapour diffusion resistance coefficient µ:	≤ 20			
Binder	white hydrated lime, white cement			
Characteristics of organic top renders (weber.pas)				
Water absorption coefficient w [kg/m²·√h]:	< 0.5			
Water vapour diffusion resistance coefficient µ:	60-190			
Binder:	dispersion, water glass (only weber.pas 460 AquaBalance/ 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 312 ultra-solid mesh for corner reinforcement
- weber.therm 313 coarse mesh for corner reinforcement with PVC orofile (mesh size 8 x 8 mm)
- weber.therm 314 thin mesh for corner reinforcement with PVC profile (mesh size 4 x 4 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)
- Frame-seal beads for window connections
- weber.therm 345 PU foam (reaction to fire BI) for filling small joints between insulation boards
- Decor profiles for facade design
- Render profiles for corners and stop-ends

Facade / Wall

4. Working instructions

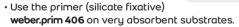
4.1 Preliminary conditions

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.
- The contractor should report concerns in case of:
- heavy contamination, efflorescence, extremely smooth surfaces, greater unevenness than allowed by the national quidelines.
- too high building moisture (e.g as a result of moisture-generating finishing works).
- Install horizontal coverings, such as window sills, roof terminations, parapet covers etc.
- 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.
- All necessary waterproofing works relating to the Etics must completed prior to its installation.

4.2 Preliminary works

- Remove all residues of concrete and mortar.
- Flatness differences of ± 10 mm can be compensated by the bonding mortar (± 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. Alternatively 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 lightweight lime-cement underlay render weber.dur 132. Clean substrate and old render, eventually pre-wet.
- Whenever the old organic paint or the render is load-bearing, insulation boards can be glued after substrate cleaning. Whenever these substrates are not loadbearing, their surface must be opened in a checkboard pattern and removed 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 necessayry 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**, 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 layer of polystyrene. Remove dust from the boards prior to their gluing. Do not install humid or defective boards. The bonding and reinforcing mortars weber.therm 300, 301, 302 or 304 are convenient for gluing insulation boards.

In case of poorly absorbent 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). It 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.
Cut off the tongue (picture 5) of the boards (placed on the lowest row) on their lower length side.

Apply the bonding mortar all around the insulation boards in a frame shape and in 2 - 3 vertical strips on their backside (picture 6).

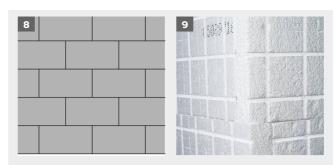
Apply so much mortar that a contact surface with the substrate of at least 50% is obtained after pressing the boards onto the fresh bonding mortar.





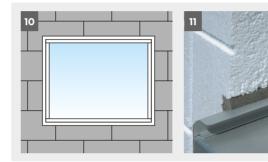
In case of sufficiently even substrates and in case of insulation boards weber.therm EPS Facade speedy the mortar can be mechanically sprayed in 5 cm-width and 1.5 - 2 cm-thickness beads on the walls (picture 7).

The distance between the beads should not exceed 10 cm. Immediately after mortar application, position the boards directly



without delay (within max. 10 minutes after spraying and depending on substrate), press them on and float them in using horizontal movements. The bonding of boards always begins at one angle of the facade. All further boards are laid butt-joint (i.e without joint inbetween) in successive rows, starting from the low level determined by the starting profile and with a general offset of at least 25 cm and a minimum 10 cm in each part (picture 8).

Also at the angles the boards are laid offset; in this case the board edge must be protruding over the building angle by the board thickness and the thickness of mortar bed (picture 9).



For reduction of cracks the insulation 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 10).

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 in-between must be installed in all angles and at all wall openings (doors and windows) between insulation boards and the building parts (picture 11).



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 12).

Align all insulation boards plumb and flush with a straight edge.

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. Only in case of thick-layer top coat renders (for ex. scratch renders) install drivein dowels weber.therm Schlagdübel (2 pieces/m²). If the stability can not be obtained in case of non loadbearing substrates, use the approved dowels weber.therm (picture 13). Plan 4 dowels per m² in all cases with timber substrates. For full information request technical advice.

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



Etics with EPS insulation boards with thick-layer mineral render set-up

4.6 Design of corners and profiles

Install the ultra-solid mesh for corner reinforcement weber.therm 312 with the system-compliant bonding and reinforcing mortar (picture 14).

For prevention of cracks in the areas of window sills, window lintels and other wall openings, cut **weber.therm 312** to the required dimensions and glue with the reinforcing mortar (picture 15) on the insulation boards.



Alternatively: the woven meshes weber.therm 313/314 must be fixed with the reinforcing mortar at the angles (picture 16). 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 layer of reinforcing mortar (picture 17).





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.



Etics with EPS insulation boards with thick-layer mineral render set-up



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 reinforcing mortar layer (picture 18). Install a transition between window frame and render with an appropriate frame-seal bead with glass fiber mesh flag, such weber.therm Gewebeanputzleiste (picture 19).

4.7 Reinforcing works

Facade / Wall

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 in the recommended thickness and ruled level (picture 20). Afterwards lay the woven mesh in vertical or horizontal wrinkle-free strips across the whole surface. The strips must overlap by at least 10 cm (picture 21). Gently press the mesh with a flat trowel.





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 22). 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).

During these operations it is neither allowed to expose the woven mesh nor to let a sinter skin deposit (picture 23). A separation between reinforcing mortar and window sill must be carried out.





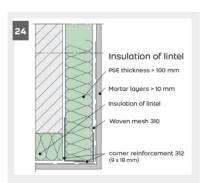
Window reveals, decorative offset frame and jambs, and render strips

For such areas (with different texture and/or colour) 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 smooth finish. After sufficient drying, apply the silicate paint weber.ton 410 AquaBalance. Plan appropriate joints for separation of adjacent building parts from the built-in render sustem.

a) Fire scenario on socket parts

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

For all insulation thicknesses the regulations require one additional fire barrier of mineral wool lamella (socket fire barrier), 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 floor. It is mandatory to strictly follow the national guidelines relating to fire protection.



Combinations woven mesh / reinforcing mortar						
weber.therm	300	301	302	304		
weber.therm 310	+	+	+	+		
weber.therm 311	_	+	+	+		
Thickness of reinforcement layer	5–8 mm	4–7 mm (311) 5–8 mm (310)	5–8 mm	5–8 mm		

b) Fire scenario in living rooms

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 3 options.

Option 1: Reinforcement of lintels with ultra-solid mesh for corner reinforcement

Glue the ultra-solid mesh for corner reinforcement weber.therm 312 $(9 \times 18 \text{ cm})$ with the bonding mortar weber.therm 300. This solution offers a sufficient fire protection of the lintels. Furthermore, a change of insulation type is avoided, and there is no joint between the insulation boards in the angles, which lead to no marking and a reduced risk of cracking.

Option 2: Reinforcement of window lintels with mineral wool lamella

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

Option 3: Mineral wool lamella 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 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 25)
- b) The socket insulation is brought downwards as perimeter insulation (drawing 26).

Conditions:

- The Etics has no waterproofing function.
- The necessary vertical and horizontal waterproofing must have been carried out.
- Precipitation water must be diverted away 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 faciliate 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 their 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) on the earth-contacting walls.

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 works. If the socket part is not deeply located in the earth, cut the board at a 45° angle at its low side.

Reinforcing mortar for areas with low impact

After hardening of bonding mortar, apply a layer with the same mortar weber.therm 300, 301, 302 or 304, which will be reinforced with the woven mesh weber.therm 310 or 311 as described above. This layer is brought up to approx. 30 cm below the expected final ground level (case a) or on the substrate (case b).

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. Alternatives: mineral building boards 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 one layer of a 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 3 - 5 mm thickness. After drying of the previous render layer it is recommended to increase its hydrophobic behaviour in the upper socket part (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 coat render with exposed natural stones weber.pas 434 can be used in the socket parts after treatment with the primer weber.prim 403.

In earth-contacting building parts apply the flexible waterproofing coating weber.dur 126 (1-comp.) or weber.tec Superflex D 2 (2-comp.). Alternative: in case of low loads on the socket parts, an organic render can be also used (weber.pas 431/471/480/481 AquaBalance).

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.

