Installation Instructions

# WEM Underfloor Heating

Article no. 30010-30081

**General notes**

Use only original WEM connection pipes and press fittings, otherwise, you will lose your guarantee for the system. For transitions to other systems, use press-fit screw fittings. WEM Underfloor Heating should not be installed at temperatures below 5 °C.

**Storage**

Store in dry location and protect against weathering.

**Components**

Installation board

Levelling board

Thermally conductive plate

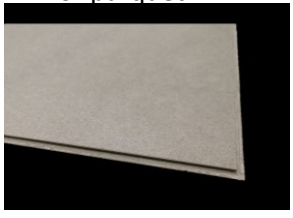
Multi-layer composite pipe

Levelling fill


Edge insulating strip

Profiled battens for wooden planks

Optional: CERALAN plate for parquet



Optional: screed replacement tile for tiling

Optional: cover plate

Ill. 1

**Scope of application**

The WEM Underfloor Heating is approved for application area 1 with the following superstructures/coverings:

- Wooden planks with a thickness of 20 mm or more; screw fixing into the installation strips
- Dry screed board KNAUF Brio 23 mm or Fermacell dry screed board 25 mm
- WEM Screed Replacement Tiles 18 mm for e.g. parquet, laminate or tiles (max. size of the tiles: edge length of 33 cm)
- WEM Ceralan boards 6 mm thick, with bonded wood parquet of 14 mm thickness and more

| Areas of application | Cat.* | Description | Concen-trated load [kN] | Area load [kN]/ m² |
|---|---|---|---|---|
| 1 ✓ | A2/ A3 | Residential buildings; hotel rooms incl. associated kitchens and bathrooms | 1.0 | 1.5/2.0 |
| 2 ✗ | B1 | Office buildings, medical practices; recreation rooms including their corridors | 2.0 | 2.0 |
| | D1 | Areas of retail spaces up to 50 m² floor space in residential, office and comparable buildings | 2.0 | 2.0 |
| 3 ✗ | B2/ C1 | Corridors in hotels, old people's homes, boarding schools; kitchens; treatment rooms incl. operating rooms without heavy equipment; school rooms, cafés, restaurants, dining rooms, reading rooms and reception rooms | 3.0 | 3.0/4.0 |

* Categories based on DIN EN 1991-1-1/NA:2012-12

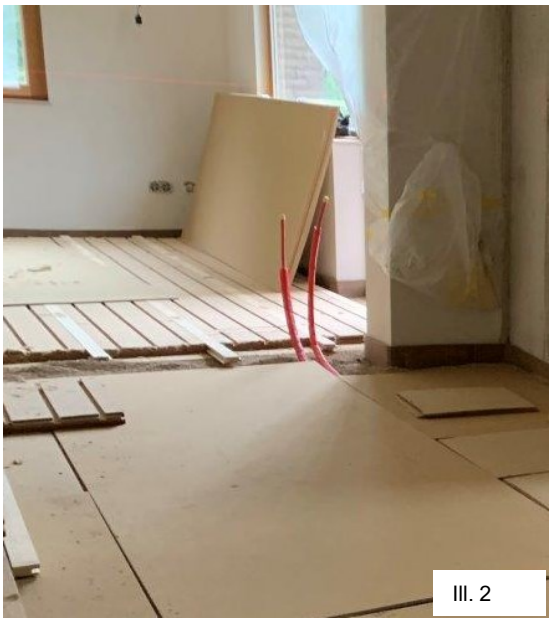
**Substrate**

The substrate must be clean, dry and even. Uneven substrates can be levelled with levelling fill and then covered with the Pipe Base cover plate (thickness: 20 mm) as a subbase.

**Connection pipes**

The laying of the supply lines from the manifold to the individual heating circuits must be well planned in advance. When laying underfloor heating over larger areas or in several rooms, it is advisable to lay the connection pipes in a substructure of fill or insulation board and to route them up to the point where the respective supply and return pipes of the heating circuit are connected (see example Ill. 2).

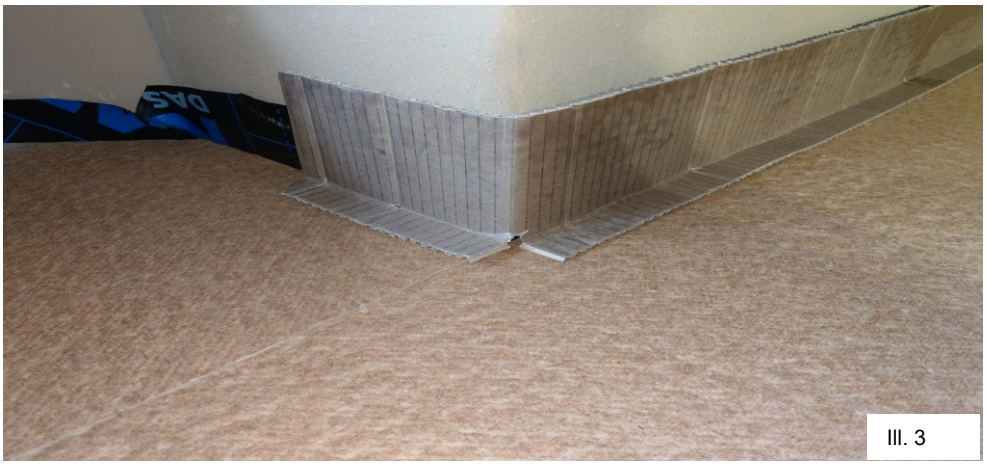
Alternatively, the connection pipes can be laid either on wall surfaces (pipes may have to be covered) or on raw ceiling surfaces (e. g. in the case of suspended ceilings).



Ill. 2

**Fitting the edge insulating strip**

The edge insulating strips are placed against the walls in upright position (Ill. 3) and fixed to prevent slipping during the installation. The lower part of the insulating strip is self-adhesive.

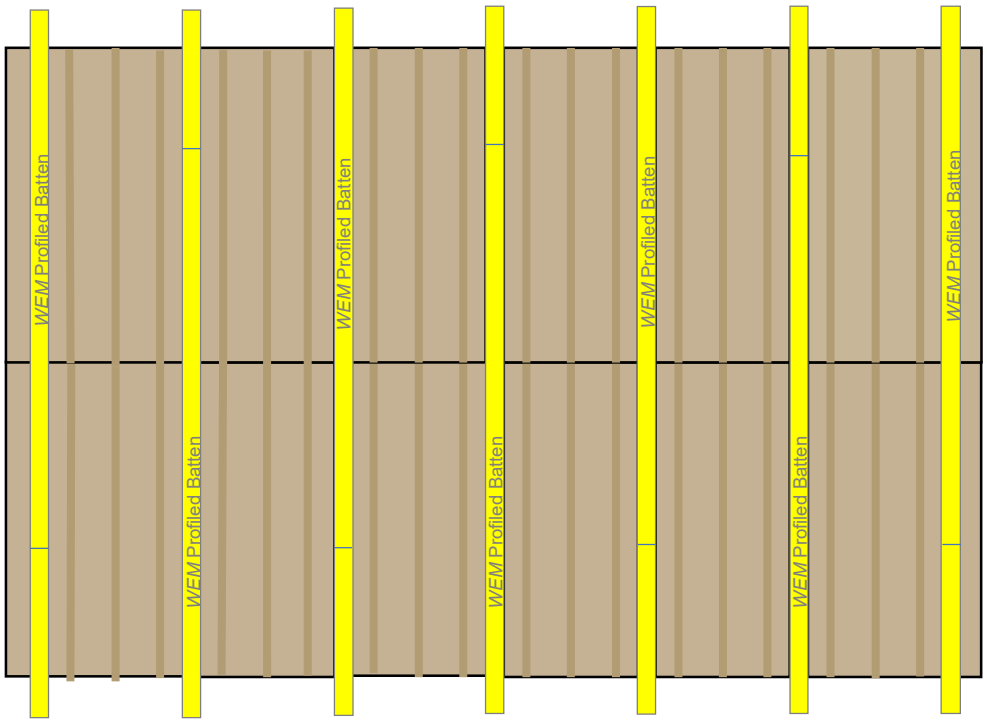


Ill. 3

## Structure 1:
## Floor construction with screwed wooden planks:

**Step 1.1:**
**Design**

When laying the system, make sure not to start with a profiled batten in the edge area. You should start with a full or cut board. The width of the edge board can be determined with the help of our tool (please contact us).




Ill. 4 a


Ill. 4 b

## Structure 1:
## Floor construction with screwed wooden planks:

**Installation boards**

Cut the wood-fibre boards with a piercing saw, a circular saw or other woodworking machines (Ill. 5).


Ill. 5

**Step 1.2: Laying the installation boards and profiled battens**

Boards and profiled battens are laid alternately (tongue and groove profile) floating on the subfloor without gluing. The profiled battens provide for the later fixing of the planks by screws and run transversely to the planked flooring. Due to the groove-and-tongue joints, the profiled battens fit flush to the surface of the installation boards and levelling boards and do not come in contact with the unfinished floor. The gap provides for impact sound decoupling, on the one hand, and ensures that the timber floor is in direct contact to the thermally conductive plates, on the other hand. This is important for heat transmission (Ill. 6).

Ill. 6

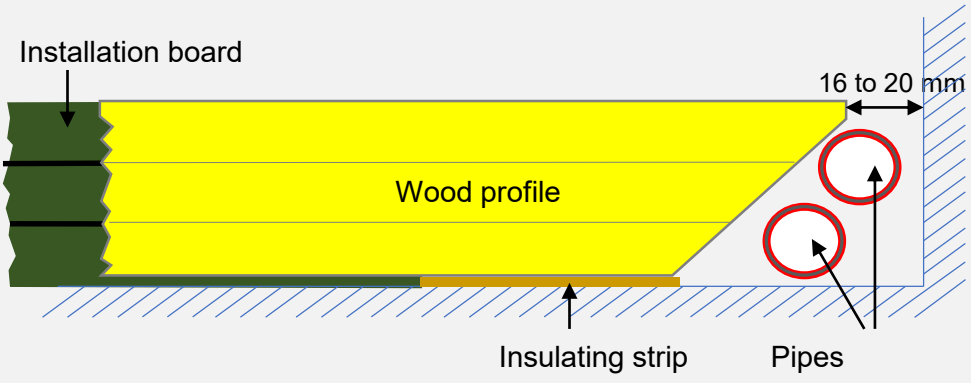
The first row is laid as described on page 4 with cut boards. For the following rows of boards, the edges of the boards perpendicular to the milled pipe supports are laid at a distance of at least 25 cm from the wall (Ill. 7). This gap, where the pipe bends will later be laid, remains free for the time being and is filled with a compression-resistant filling material at the end.


Ill. 7

The profiled battens are to be installed with the side carrying the stamp facing upwards. In contrast to the installation boards, the battens are installed with a lower distance to the wall of min. 16 mm to max. 20 mm (Ill. 7 + 8).

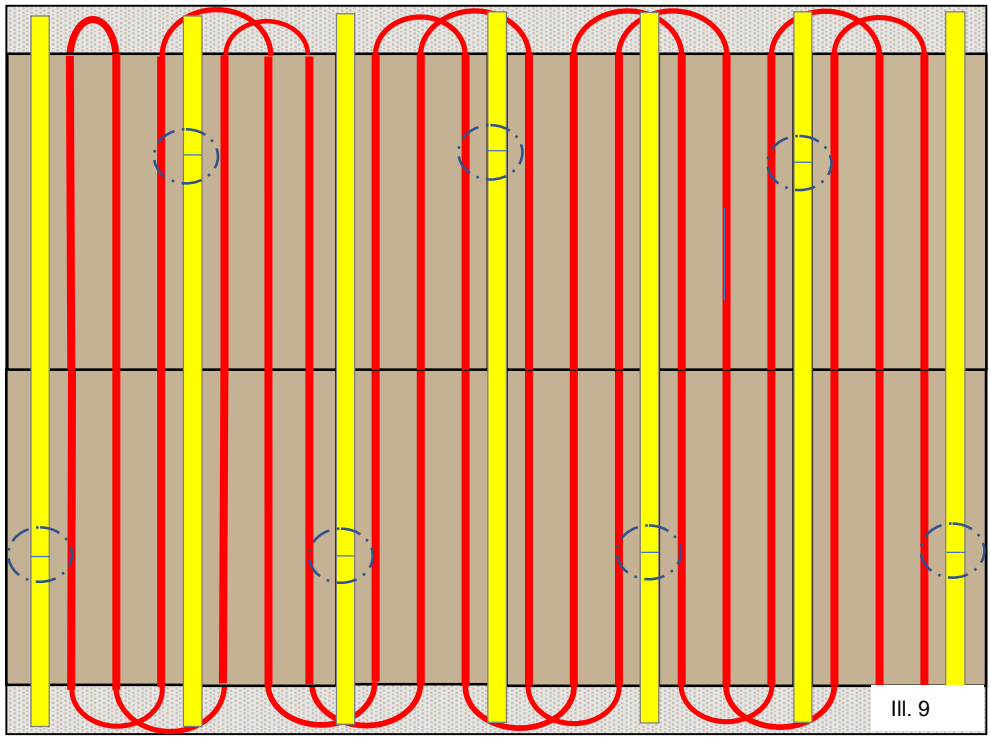
**Profiled batten**

The profiled battens are bevelled at the ends so that the piping can be passed between the wall and the batten (Ill. 7). The part of the profiled batten protruding into the filling space is underlaid with a 5 mm insulating strip. The insulation strip can fixed with staples or glue.




Ill. 8

The profiled battens are installed in a staggered arrangement (Ill. 9). The longitudinal joints of the battens must be arranged in such a way that there is a minimum length or an offset of at least 50 cm to the preceding row of battens.

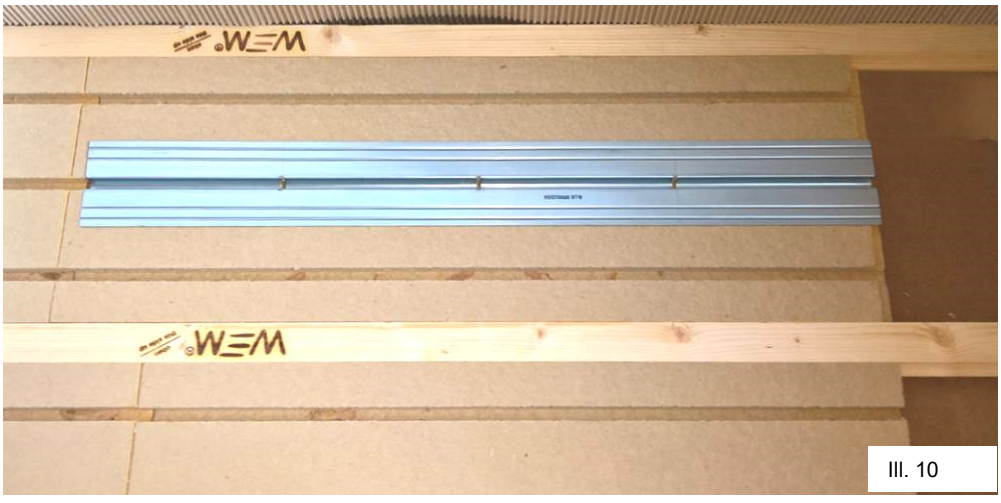


Ill. 9

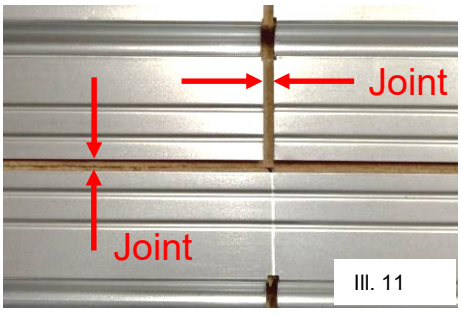
**Step 1.3: Laying the thermally conductive plates**

The thermally conductive plates are laid on the installation boards with the grooves fitting in (Ill. 10).

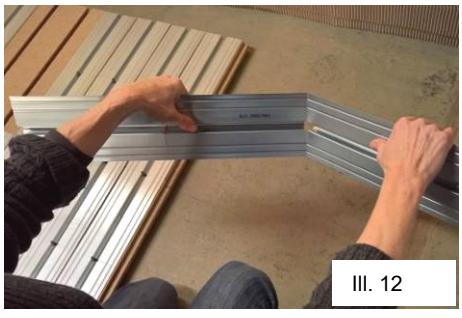
They must not touch or overlap at the joints (Ill. 11). To support the separation of the plates, a tear seam is provided every 25 cm (Ill. 12).



Ill. 10



Ill. 11


Ill. 12

**Step 1.4: Laying the pipes**

Use a pipe decoiler when laying the multi-layer composite pipe (Ill. 13).

Ill. 13

On the way into the room, lay the pipe into every second groove (Ill. 14), on the way back to the manifold cross the pipes at every bend (Ill. 15). Make sure that the bends do not protrude above the level of the thermally conductive plates by bending them slightly down (Ill. 16).


Ill. 14


Ill. 15

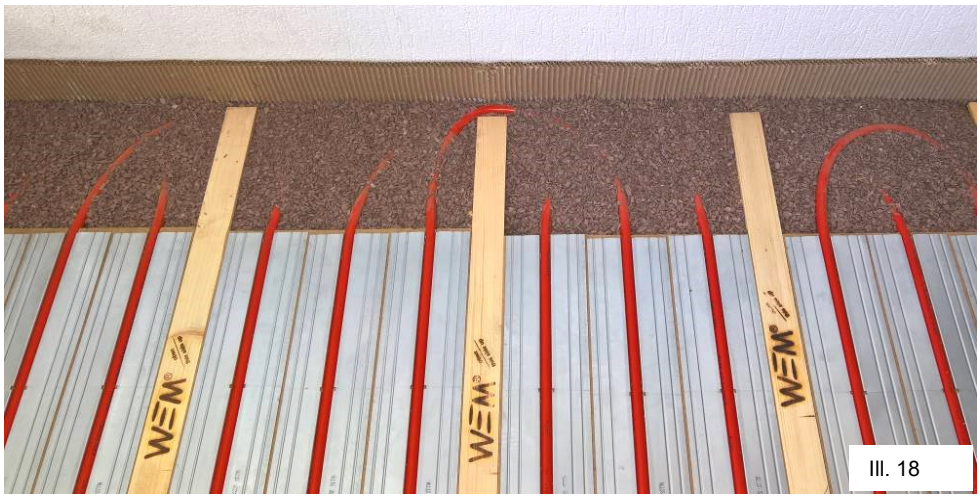

Ill. 16

**Step 1.5: Levelling border areas**

The areas of the floor next to the underfloor hearting are raised with levelling boards, which you can cut to size as desired (Ill. 17).


Ill. 17

The areas of the pipe bends are filled with compression-resistant levelling fill up to the level of the thermally conductive plates and compacted (Ill. 18).




Ill. 18

**Step 1.6: Laying the wooden planks**

The tongues of the planks are screwed to the profiled battens, which provides for concealed fixing (Ill. 19). The fixing screws of the first and the last plank must have a distance of at least 50 mm to the wall to make sure that the pipe is not damaged by a screw.

Ill. 19

## Structure 2:
## Floor construction with covering of tiles, screed replacement tiles or glued parquet:

**Step 2.1: Planning and preparation**

Fit the edge insulating strips as described on page 3.

Cut the wood-fibre boards with a piercing saw, a circular saw or other woodworking machines (Ill. 20).


Ill. 20

**Step 2.2: Laying the installation boards**

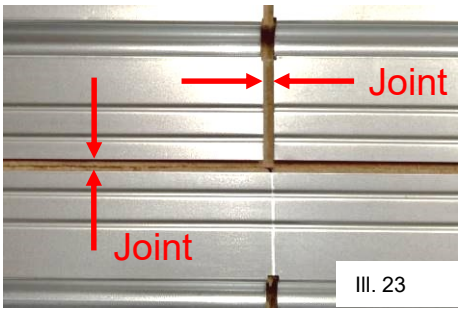
The installation boards are laid out on the floor. The board edges perpendicular to the milled pipe grooves should have a distance of at least 33 cm to the wall (Ill. 21). A wood-fibre board strip having a width of approx. 8 cm (and the same thickness as the installation board) is laid directly along the wall. The 25-cm-wide area created in this way, which accommodates the pipe bends later, remains free for the time being and is filled with a compression-resistant fill at the end.


Ill. 21

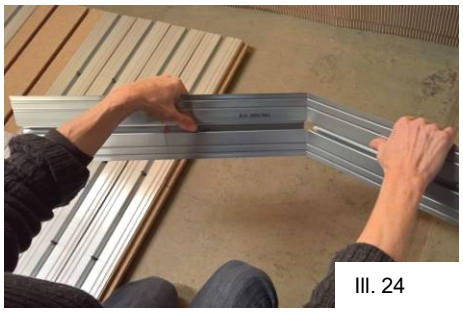
**Step 2.3: Laying the thermally conductive plates**

The thermally conductive plates are laid on the installation boards with the grooves fitting in (Ill. 22). They must not touch or overlap at the joints (Ill. 23). To support the separation of the plates, a tear seam is provided every 25 cm (Ill. 24).

Ill. 22




Ill. 23



Ill. 24

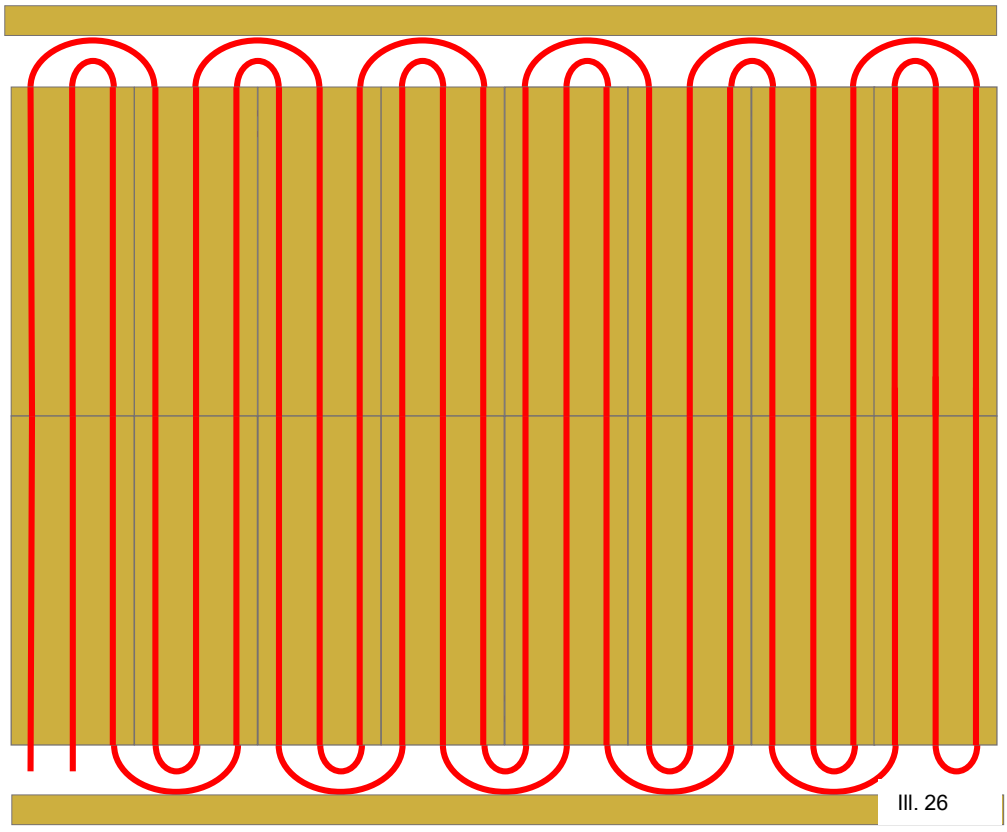
**Step 2.4: Laying the pipes**

Use a pipe decoiler when laying the multi-layer composite pipe (Ill. 25). On the way into the room, lay the pipe into two neighbouring grooves and leave out the next two grooves and so on, on the way back to the manifold lay the pipe in the same arrangement into the empty grooves (Ill. 26). Bend down the bends slightly so that they do not protrude above the level of the thermally conductive plates and lie evenly in the filling space.

Ill. 25

**Laying scheme:**

A spiral spring must be used to lay the pipe.



Ill. 26

**Step 2.5: Levelling out border areas**

The areas of the pipe bends are filled with compression-resistant levelling fill up to the level of the thermally conductive plates and compacted.

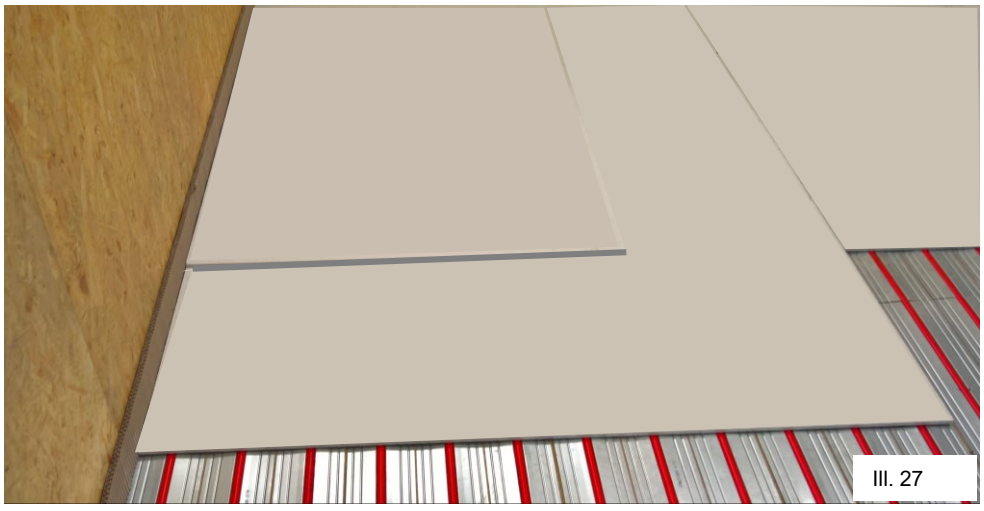
**Step 2.6: Separating layer**

A separating layer of foil or kraft paper is laid on the finished surface.

## Structure 2 A:
## Preparation for tiling:

**Laying dry screed boards**

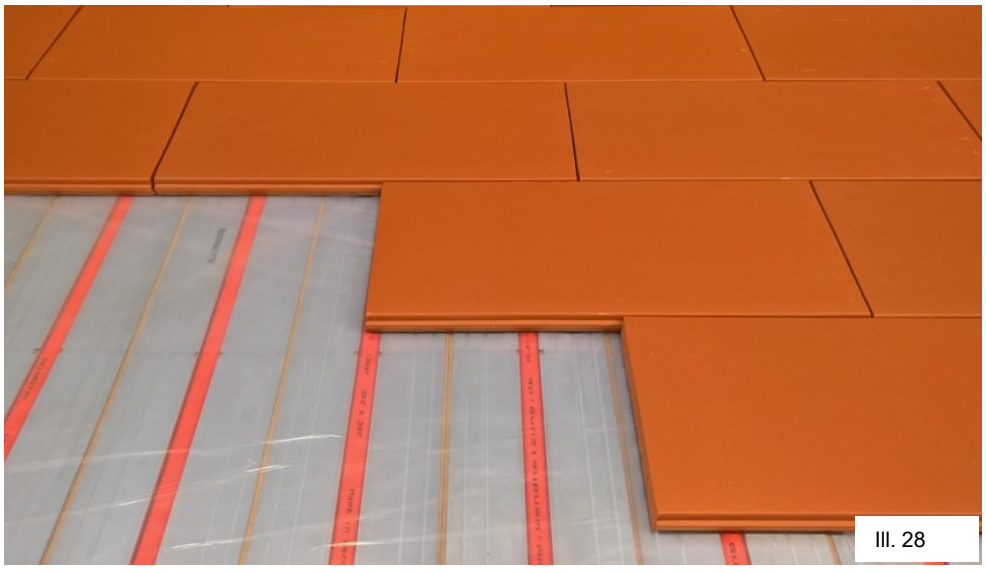
The WEM flooring system is approved for a maximum tile edge length of 33 cm. A dry screed board can be used as a substrate for gluing the tiles (e. g. KNAUF Brio 23 mm or Fermacell dry screed board 25 mm) (Ill. 27).



Ill. 27

**Laying screed replacement tiles**

Alternatively you can use screed replacement tiles (Ill. 28). Like the dry screed boards, the screed replacement tiles are glued together and laid as floating screed.

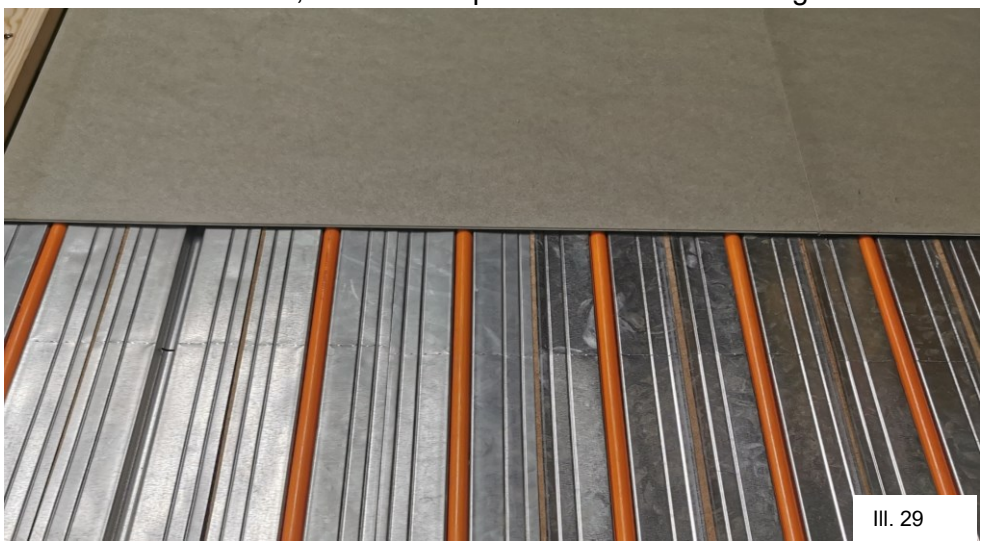


Ill. 28

## Structure 2 B:
## Laying of Ceralan boards and preparing the gluing of parquet:

**Application:**

The WEM floor system with Ceralan boards is suitable for use with prefinished parquet flooring of a minimum thickness of 14 mm. The prefinished parquet is glued on over the entire surface and, in combination with the Ceralan board, forms a compression-resistant flooring.



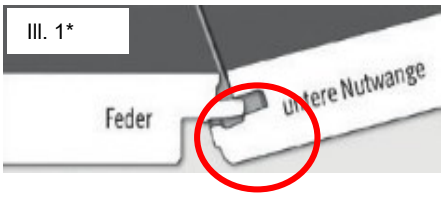
Ill. 29

**Step 2.1 B:**
**Preparation**

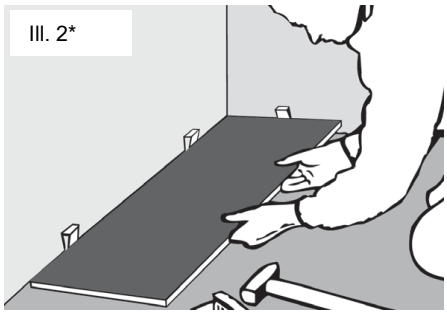
Prior to the installation, the Ceralan boards must be conditioned in the installation room stacked flat on a pallet for approx. 48 hours at a temperature of 20 to 22 °C and a relative humidity of 50 to 60 %. These temperature and humidity conditions must also be respected during and after the installation.
You can cut the Ceralan boards with conventional woodworking machines (saw blade e.g. MP.5 3125 or Bosch T141 HM).

**Step 2.2 B:**
**Laying**

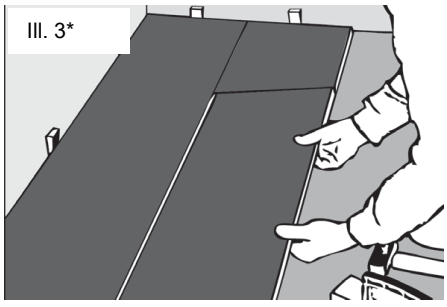
Start laying the boards on the right side in a room corner. Due to the dimensional stability of the Ceralan board, an edge distance of 3 to 4 mm to all fixed components is sufficient when laying the boards. Existing structural expansion joints must be retained.



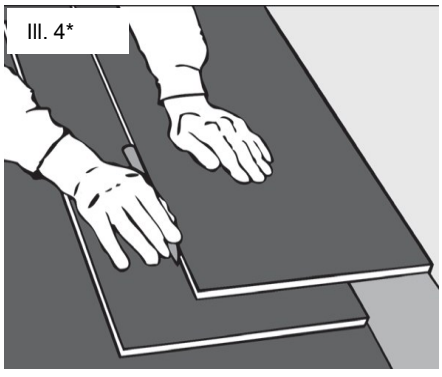

For the first row, cut the grooved sides of the boards so that the lower groove cheek, which protrudes above the upper cheek, is cut off (Ill. 1*).



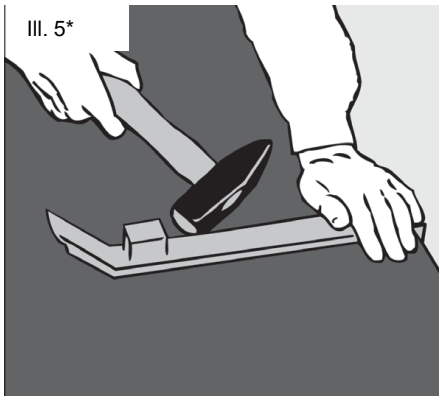

Place the first board so that the sides with the cut grooves (Ill: 2*) face the wall. The boards of the first row can be click-joined at the face side by aligning them at an angle or by tapping them with a hammer and tapping block.




After the first row has been precisely aligned using a setting batten, start laying the second row with the remaining piece of the last board of the first row. Offset of the board joints by at least 15 cm. Place the first panel at a slight angle (Ill. 3*) and click-fasten it using a tapping block and hammer. Proceed in the same way with the second board and drive the face joint of this board into the first board using a tapping block etc.




Fitting in the last row: Place the board to be cut exactly on the previous row. Then draw the longitudinal section with the help of another Ceralan board (Ill. 4*). This way of marking ensures enough distance to the wall to fit the last row by aligning the boards at an angle and inserting them using a pull bar.

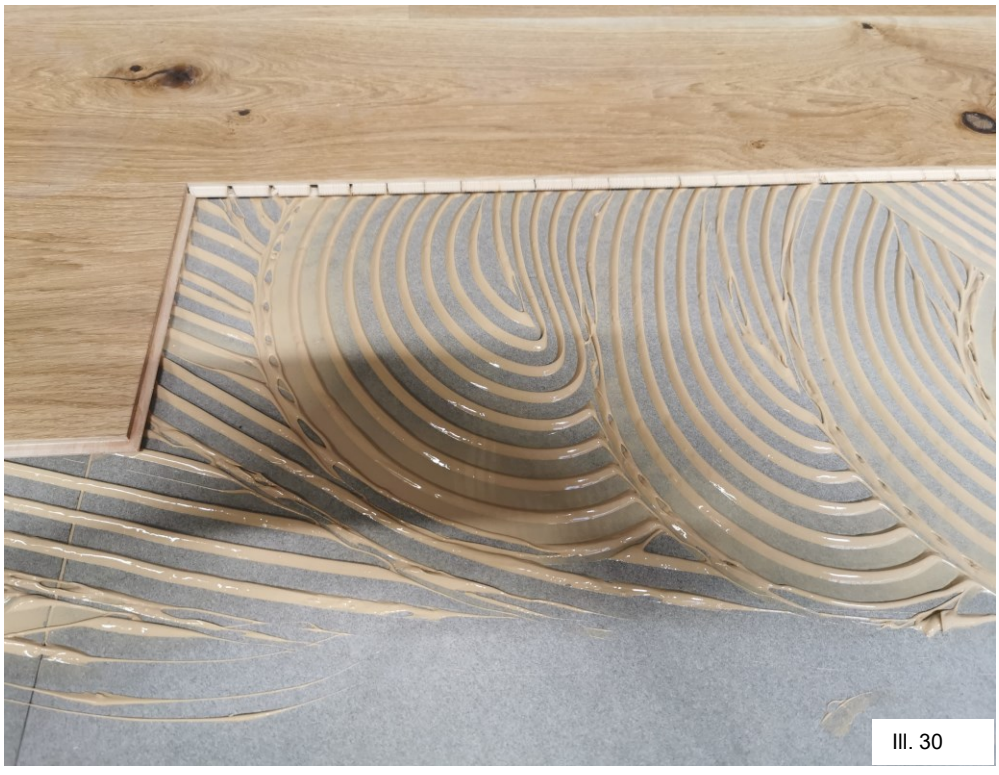



The last row of boards is driven together lengthwise with the pull bar and endwise with the tapping block.

* Source of illustrations:
ZIPSE GmbH & Co. KG, Kenzingen

**Step 2.3 B: Gluing the parquet**

For gluing the parquet flooring, we recommend using a silane-based parquet adhesive (e. g. Bona Quantum or WAKOL MS 230). Before gluing, the surface must be dusted. The parquet is glued according to the manufacturer's instructions (Ill. 30).



Ill. 30