

On floor joists with LK HeatFloor 22



DESIGN

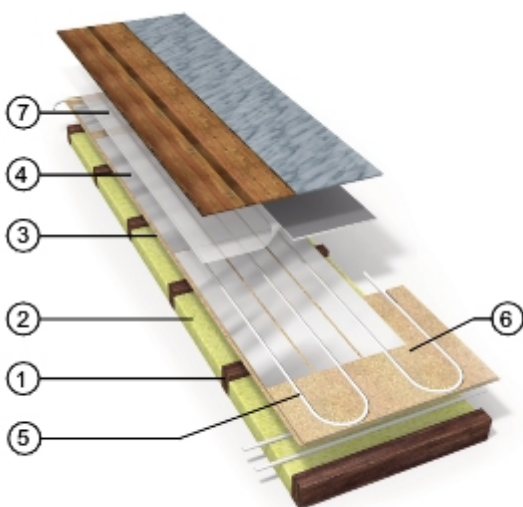
LK Under Floor Heating using LK HeatFloor 22 Slotted and Turning board is intended for installation on standard wooden joist floors c/c 600 mm max. The construction consists of a load bearing slotted 22 mm chipboard floor, which replaces the standard board in floor constructions. Construction outlines has Sitacs approval certificate 0255/07.

REQUIREMENTS

A prerequisite for good function of the underfloor heating system is weather dependent control of supply temperature and a well-conducted and documented adjustment of the primary and secondary loop flow.

In general the guidelines apply in accordance with local building codes and for selected bespoke design solutions.

CONSTRUCTION OUTLINE



1. Floor joists

2. Insulation

Joist insulation should fill up the entire joist cavity. The intermediate joist is not usually fully insulated. But to avoid any problems with cooling underside of the plates at the leaky/drafty floor is recommended that the insulation fills up or rest against the underside of the plate.

3. LK HeatFloor 22, Slotted board

Dim. 1800 x 600 x 22 mm with “tongue and groove” on all four sides. The board has 3 slots c/c 200 mm suitable for use with LK Heat Distribution Plate 16 and LK Universal Pipe 16 mm.

4. LK Heat Distribution Plate 16/190

L=1150 mm, W=190 mm

5. LK Universal Pipe dim.16 mm

6. LK HeatFloor 22, Turning board

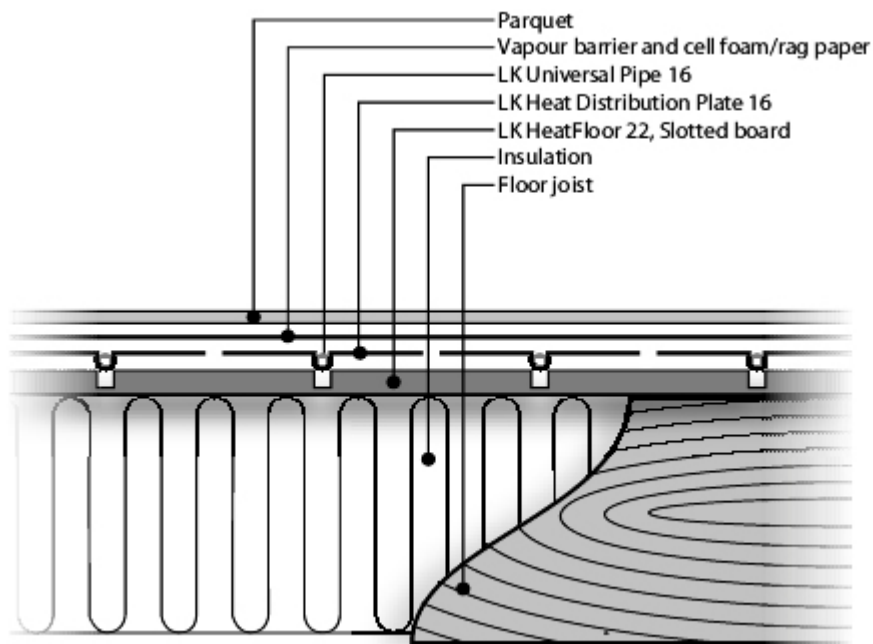
Dim. 595 x 800 x 22 mm

7. Vapour barrier according to the floor manufacturer’s instructions and cell foam / rag paper

SURFACE LAYER

Parquet

The heating system is first covered with a vapour barrier (PE sheet) according to the floor manufactures instructions followed by rag paper or open-cell foam sheet. Parquet flooring (min. 14 mm thick) is then laid in the same direction as the floor heating circuits. Always adhere to the flooring supplier's instructions. Always ask LK for advice for floors exceeding 25 mm thickness.

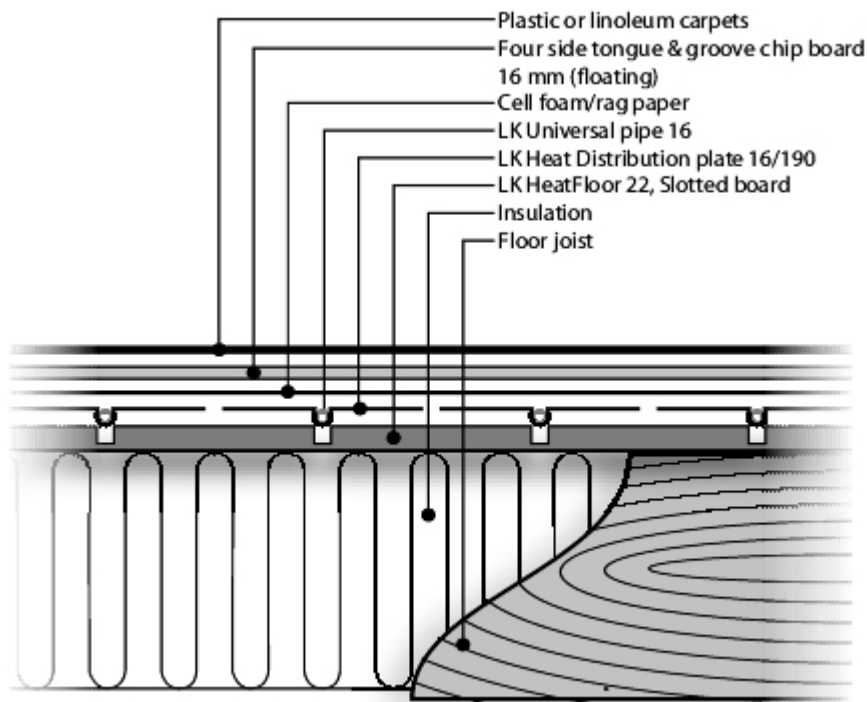


LK HeatFloor 22 on floor joists (max joist distance 600 mm). Surface layer parquet min. 14 mm.

Plastic or linoleum flooring

Dry areas

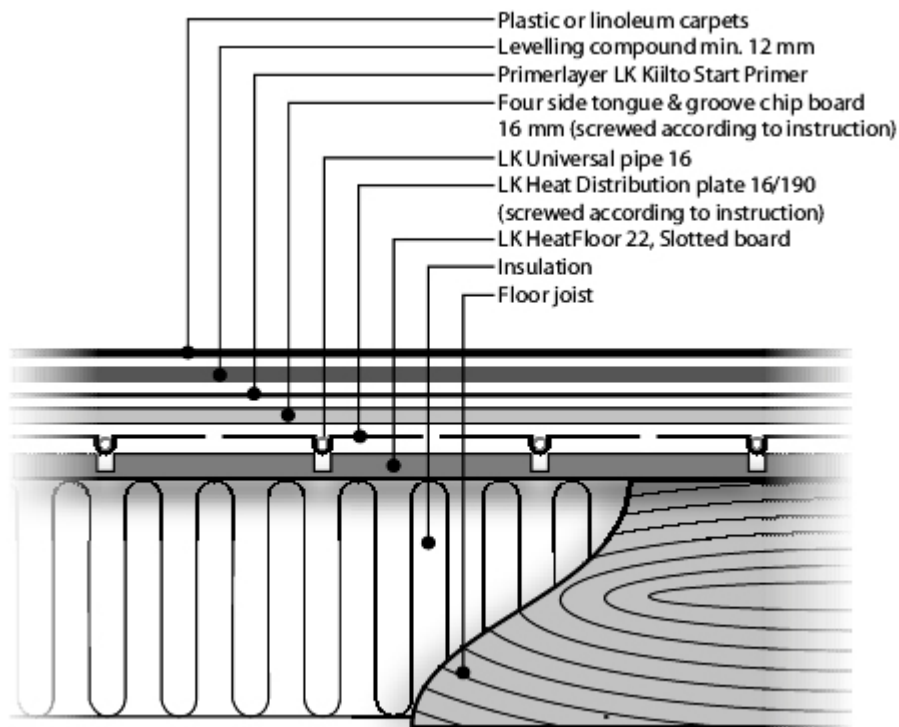
Where using plastic or linoleum flooring, an intermediate floor of approved 16 mm T & G chipboard is laid floating according to the manufactures instructions. The vinyl/linoleum is then fixed (glued) over the chipboard to the manufactures instructions.



LK HeatFloor 22 on floor joists (max. joist distance 600 mm). Surface layer of plastic or linoleum carpets in dry areas.

Wet areas

In wet room areas, lay and fix T & G chipboard (min. 16 mm) to the manufactures instructions. The board must be primed. In Sweden, for gradient screed shower rooms, the screed must be minimum of 12 mm at drains. Follow suppliers and local building regulations.



LK HeatFloor 22 on floor joists (max. joist distance 600 mm). Surface layer of plastic or linoleum carpets in wet areas.

Ceramics or natural stone

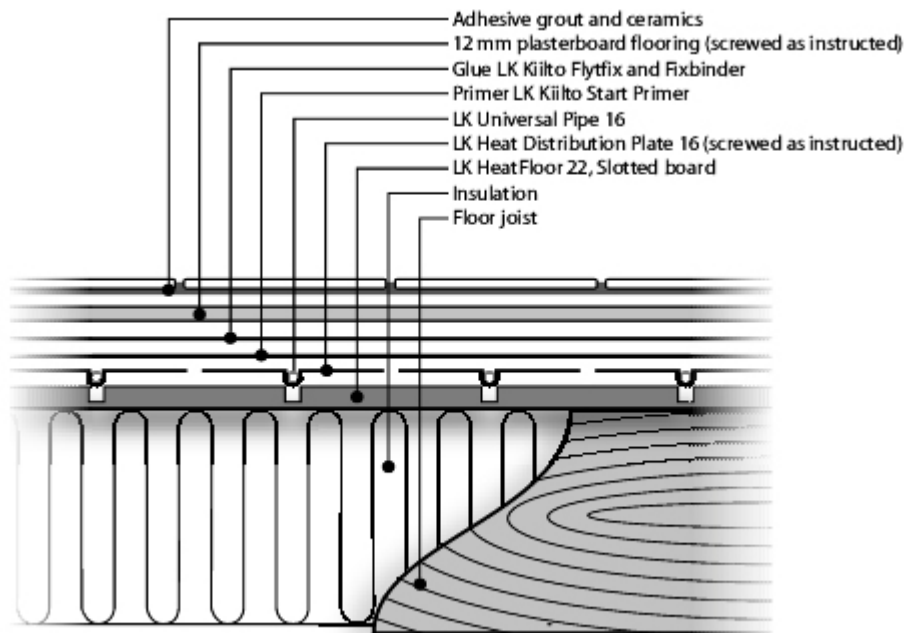
For ceramics or natural stone, centre between joists must not exceed 300 mm generally requiring cross battening.

Dry areas

LK Heat Distribution Plate must, after completing laying the pipe, be screwed in place in a zigzag pattern c/c 150 mm. Use suitable flat headed screws (length 14-20 mm). Make sure that the floor and heat distribution plates are clean, vacuum carefully.

Apply LK Kiilto Start Primer on the entire surface, let dry for 1-2 hours. If there is oil or grease on the plates this must be washed off before applying primer. Glue a 12 mm floor grade form stable board for floors (for example plasterboard or fibre cement board) onto the floor with LK Kiilto Flytfix mixed with LK Kiilto Fixbinder. Apply the glue with a putty-knife, and then "comb out" the glue with a notched trowel (notched 6-8 mm). Fix the floor grade form stable board within 10-15 minutes after the glue is applied. Mark out the position of the pipes at the same time, to avoid any damage in the next step, when the boards are screwed in place.

The boards are screwed in place with a screw for plaster board along all sides and between the pipe rows. For cement-boards, use chipboard screws and for plasterboards use plasterboard screws. Begin to screw the sides of the board 50 mm in from the corners and after that with a distance of max. 300 mm in between. Screw between the pipe rows with a distance of max. 500 mm between the screws. When the glue has dried after approx. 5 h the tiling can begin.



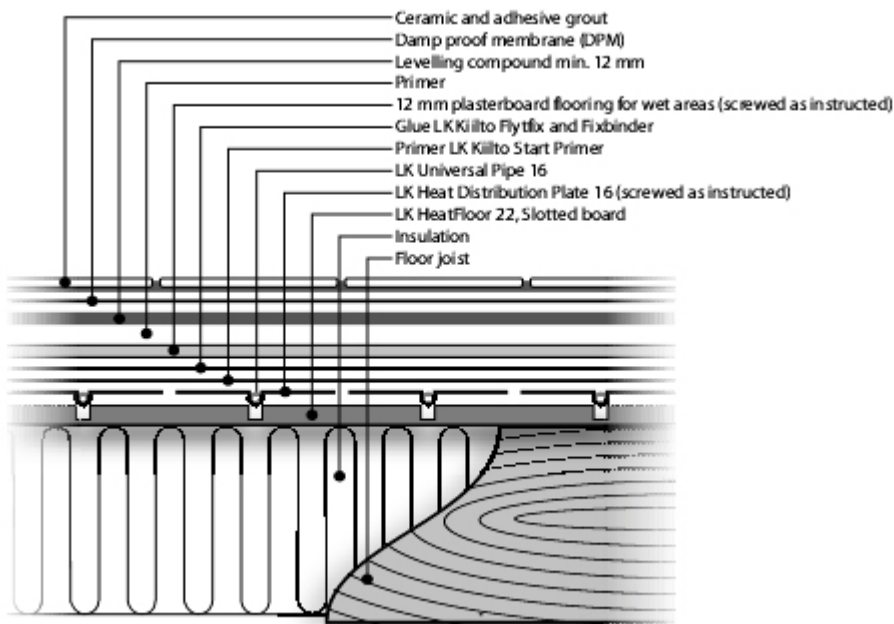
LK HeatFloor 22 on floor joists (max joist distance 300 mm). Ceramics in dry areas.

Wet areas

LK Heat Distribution Plate must, after completing laying the pipe, be screwed in place in a zigzag pattern c/c 150 mm. Use suitable flat headed screws (length 14-20 mm). Make sure that the floor and heat distribution plates are clean, vacuum carefully.

Apply LK Kiilto Start Primer on the entire surface, let dry for 1-2 hours. If there is oil or grease on the plates this must be washed off before applying primer. Glue a 12 mm floor grade form stable board for wet areas (for example plasterboard or fibre cement board) onto the floor with LK Kiilto Flytfix mixed with LK Kiilto Fixbinder. Apply the glue with a putty-knife, and then "comb out" the glue with a notched trowel (notched 6-8 mm). Mount the floor grade form stable board within 10-15 minutes after the glue is applied. Mark out the position of the pipes at the same time, to avoid any damages in the next step, when the boards are screwed in place.

The boards are screwed in place with a screw for plaster board along all sides and between the pipe rows. For cement-boards, use chipboard screws and for plasterboards use plasterboard screws. Begin to screw the sides of the board 50 mm in from the corners and after that with a distance of max. 300 mm in between. Screw between the pipe rows with a distance of max. 500 mm between the screws. When the glue has dried after approx. 5 h the tiling can begin. Use levelling compound on the boards to create a sloping floor in wet areas, min. 12 mm by the floor drain. After that a waterproofing/sealing layer and ceramic tiles. Follow the supplier's instructions.



LK HeatFloor 22 on floor joists (max. joist distance 300 mm). Ceramics in wet areas.

Alternative solution for dry and wet areas

For wet rooms and as an alternative solution for dry rooms a slab with levelling compound can be made with LK Kiilto UFH Levelling Compound. Lay 2 layers of good quality DPM over the under floor heating and ensure the DPM forms a skirt up walls of 100 mm. Then lay mats of LK Steel Mesh 70x70x2,5. Let the mats overlap min 70 mm. Cover the installation with LK Kiilto UFH Levelling Compound. Total thickness should be min. 30 mm by floor drain. When the compound has dried after 3-5 days, tiling can begin. Follow suppliers and local building regulations.

LK HEATING CIRCUIT MANIFOLD

The LK Heating Circuit Manifold should be assembled in the intended place as shown in the drawing. Please read the instructions enclosed with the manifold first.

Lay the piping out before assembling slotted and turning boards to avoid obstructing access to the supply and return lines.

EVENNESS OF FLOOR JOISTS

Before the boards are laid, the desired degree of evenness under the floor should be inspected. Maximum curvature ± 3 mm over a distance of 2 metres and $\pm 1,2$ mm over a distance of 0,25 metres.

ASSEMBLY OF LK HEATFLOOR 22 SLOTTED AND TURNING BOARDS

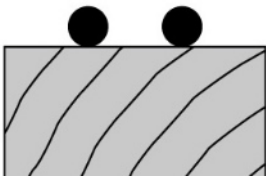
Slotted and turning boards are laid at right angles to the joists. The maximum allowed distance between joists is 600 mm. For ceramics or natural stone, (in Sweden) centre between joists must not exceed 300 mm. The board measures 1800x600x22 and is tongue and grooved on all four sides, making possible continuous installation, i.e. joints can be made between the joists. Short sided joints must not be positioned closer than 200 mm to the short sided joint in the next row if the joints occur between the same pair of joists.

The turning boards are not tongue and grooved on the long sides. When the short side of the slotted board meets the turning board the tongue/groove of the slotted board must be cut/ removed. Note that the joint between the slotted board and the turning board needs to be supported in the middle by a floor joist.

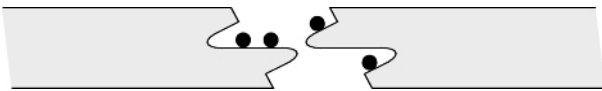
If the installer decides not use turning boards, but to use a routing tool, the board must be fully supported from beneath. To produce the correct routed profile, the use of LK Router Steel is recommended.

The boards must be fully supported by joists or studs along all walls. Ensure 10 mm expansion gap is left around all walls and fixtures.

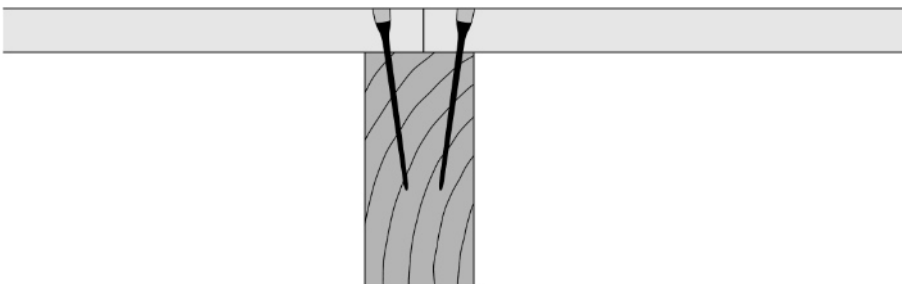
Glue the boards thoroughly to the joists and studs using Casco mounting glue 3303 or the equivalent. **Make sure that the grooves in the slotted boards are set in line with the grooves in the turning board.**



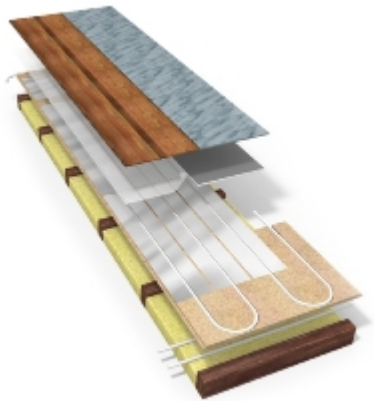
The grooves and joints of the boards must be glued using Casco mounting glue 3303 or the equivalent. The amount of glue must be generous so that an excess will be pressed out during laying; excess should then be wiped off. The amount of glue required is approx. 1,3 L per 10 m² of floor area.



Screw the boards to each joist and joist support using a row of screws. Where the short joints meet insert a row of screws in each board on the same joist. Use a maximum screw distance of 150 mm along all supported outer edges and short joints and 300 mm along the intermediate supports. Use 3,9 x 55 mm chipboard screws countersunk approx. 2 mm into the board. Complete the installation one board at a time.



PIPE TURNING WITH LK HEATFLOOR 22 TURNING BOARD

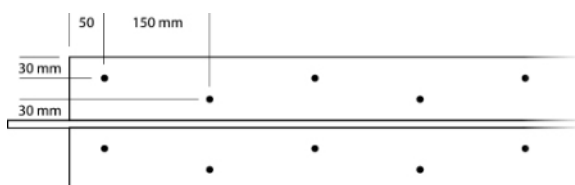


When turning pipes with turning board, the turning board must be fitted and the pipes must be laid at the same time. Please note that the laying of the supply and return pipe ends is done before the turning board is fitted.

LK HEAT DISTRIBUTION PLATE 16/190

LK Heat Distribution Plates are laid out at a distance of between 10 - 100 mm and pressed down into the board slots. The plates can be shortened by snapping across the break lines. The slots in the board must be carefully cleaned (vacuum-clean the slots) before the plates are laid out. Check carefully that the grooves between the slotted boards and between slotted boards and turning boards are in line before the LK Heat Distribution Plates are laid. If the grooves are not in line, the LK Heat Distribution plates will not fit between board joints. Warning: This may cause buckling of the heat distribution plates which can cause noises in the floor.

When using ceramics as surface layer must LK Heat Distribution Plates be screwed in place in a zigzag pattern. See illustration below.



NOTE! Screw the plates after laying the pipes.
Use flat headed screw, length 14 - 20mm.

LAYING THE PIPE

Lay the under floor heating pipe out according to the layout drawing. Using LK Pipe Decoiler will aid pipe laying. Ensure the direction of flow in the loop is such that the supply line is closest to the outer wall. Number and name the circuits according to the drawing. Check before you lay the pipe that the plates are clean (vacuum-clean the slots).

Press or tread down the under floor heating pipe into the slot of the plate. After assembly the pipe must lie in the slot and must never under any circumstances touch the over-lying floor.

Entry and exit from the floor joist boxes for supply/return of the circuits is made from the cut-outs in the turning boards.

Pipes should be cut using pipe cutter intended for PE-X.

HANDLING INSTRUCTIONS

General

At delivery and before assembly; always check that the boards do not have any visible defects.

Before the boards are fitted, it is important that they be conditioned for 2-3 days in the climate in which they will be used.

Read separate assembly instructions before beginning to install LK HeatFloor. If something is unclear or indistinct, contact your supplier before installing!

V20 (P6)

LK Slotted Boards and Turning Boards marked quality class V20 (P6) are intended for use in dry indoor environments, climate classes 0 and 1. They must not be used outdoors or in such a way that they are exposed to damp or to air with a very high humidity level.

V313 (P5)

Moisture-resistant LK Slotted Boards and Turning Boards marked quality class V313 (P5) are intended for use in climate classes 0, 1 and 2, i.e. in both dry indoor environments and rather damper environments, up to 80 % relative humidity. However, the boards must not be exposed to water in the form of precipitation or otherwise without being protected.

Protection during transport

During transport and storage the boards must be protected in such that they are not exposed to dirt and humidity. The boards must be transported and stored on a flat and level surface.

If exposed to high humidity for a lengthy period, boards with profiled edges may suffer damage to their profiles, making assembly difficult. For the same reason the boards should generally be handled with care.

Protection during storage

Sheets of chip board should be stored indoors. If this is not possible, storage out of doors should be of short duration and the boards must be carefully covered, e.g. with a tarpaulin, to protect them from precipitation. Remember to allow for ventilation if they are closely packed.

The boards must be stored on a flat and level surface.

NOTE!

The boards must never be stacked directly on the ground. The ideal storage conditions are 15-25 °C and 50-60 % relative humidity. The relative humidity must not exceed 80 % for lengthy periods.

Formaldehyde

The HeatFloor boards are certified according to the E1 standard on formaldehyde emissions.

Product summary, Adhesive & primer

The following brands/products have been tested to be used for gluing and priming of our boards.

LK art. no.	Product name	Usage	Notes	Consumption	Drying time
33521	Kiilto Start Primer, 3 litres	Priming of floor heating boards with assembled heat distribution plates and priming when forming drainage slope.	Combine only with Kiilto products	1 l/10m ²	1-2 hours
33520	Kiilto Flytfix, 20 kg	Gluing of the form stable board against floor heating board	Mix 5 litres Fixbinder with 20 kg Flytfix	2-3 kg/m ²	12-18 hours
33522	Kiilto Fixbinder , 5 litres	Gluing of the form stable board against floor heating board	Mix 5 litres Fixbinder with 20 kg Flytfix	5 l /20 kg Flytfix	Not applicable
33524	Kiilto UFH Levelling Compound	Embedding under floor heating and forming drainage slope	Use only with Kiilto Start Primer	1,7 kg/m ² /mm	3-5 days
8912	Steel Mesh 70x70x2,5 1800x600 mm	Reinforcement		1,3 pcs/m ²	Not applicable