On load-bearing floors with LK HeatBoard 18

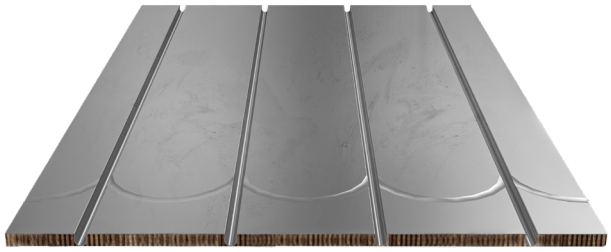
Design

- LK Floor Heating in design with LK HeatBoard 18 for laying on load-bearing floor constructions.
- The system is constructed with a cardboard-based board equipped with a laminated heat distribution layer for optimal heat dispersion.
- LK HeatBoard 18 has high insulating properties as well as being excellent for short- or long-term loads.
- LK HeatBoard 18 is equipped with integrated turning channels.
- LK HeatBoard is not intended for ceramic surface finishes.
- LK HeatBoard is not intended for use in basements or on ground slabs with a relative humidity (RH) exceeding 85%.

Product summary

Article No.	c.t.c	pipe. dim.
241 04 68	200 mm	16 mm

ATTENTION!
Read the full installation instructions before starting work.



LK HeatBoard 18.

TABLE OF CONTENTS

Requirements

The requirements for a properly functioning underfloor heating system are a weather-controlled regulation system for the supply temperature and well-implemented and documented adjustment of the primary and loop flows.

LK HeatBoard 18 must only be laid on load-bearing floor constructions. Load-bearing floor constructions refers to concrete or floor-grade chipboard fixed to joists spaced at a maximum of c.t.c 600 mm. LK HeatBoard 18 boards must not be laid over any other floor insulation, as multiple layers of insulation cause poor floor resilience. In general the instructions apply in accordance with AMA Hus (Swedish Construction Industry Standard for house-building) and for specified builders/quality managers.

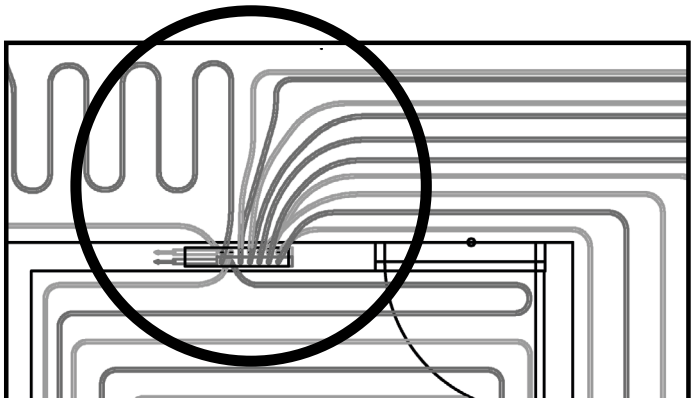
Uninsulated concrete floor constructions or cellar floors

RISK! Heat loss and moisture transfer
Uninsulated concrete floor construction or cellar floors may cause heat loss and moisture transfer. The construction should be damp-proofed. If you are unsure, contact a damp consultant or other expert for advice.

LK EcoBoard 18 is not suitable for installation on an uninsulated slab on ground or in a basement. LK recommends using LK CombiBoard EPS instead. Consult a moisture expert for guidance.

Laying LK HeatBoard 18 boards

RISK! Reduced bearing capacity
As a large number of underfloor heating circuits will be connected to the manifold, there is a risk of the bearing capacity being inadequate for the overlying floor. See illustration below. In such cases, it may be best to remove part of the LK HeatBoard 18 and fill in the gap with levelling compound. The risk is the same where a large number of underfloor heating circuits are forced together into a small space, e.g. when they pass between rooms.



RISK! Sharp edges! Use protective gloves
The laminated heat distribution layer on LK HeatBoard 18 boards has sharp edges.
Use protective gloves when handling LK HeatBoard 18 boards.

NOTE! The flatness of the sub-floor
Before laying LK HeatBoard 18 boards, check that the sub-floor is level as per AMA Hus requirements, table 43. DC/-1, class A, i.e. max. curvature ± 3 mm over a distance of 2 metres and ± 1.2 mm over a distance of 0.25 metres. The sub-floor must be vacuumed to remove any dirt and dust.

RECOMMENDATION! Tape pipe turns
LK recommends taping the pipe turns with LK Aluminium Tape when the pipes are laid.
Complete any protruding pipes with LK Aluminum Tape.

Attachment to the sub-floor

LK HeatBoard 18 must be attached to the sub-floor using one of the methods indicated below.

- Glue
- Screws. LK HeatBoard 18 boards can be screwed into the sub-floor if, for instance, chipboard is used. If using screws, it is possible to reuse all or parts of the system. Select suitable screws for the sub-floor. Screws with a large head are preferable, as this ensures the load is distributed.
- The screw head should be countersunk.

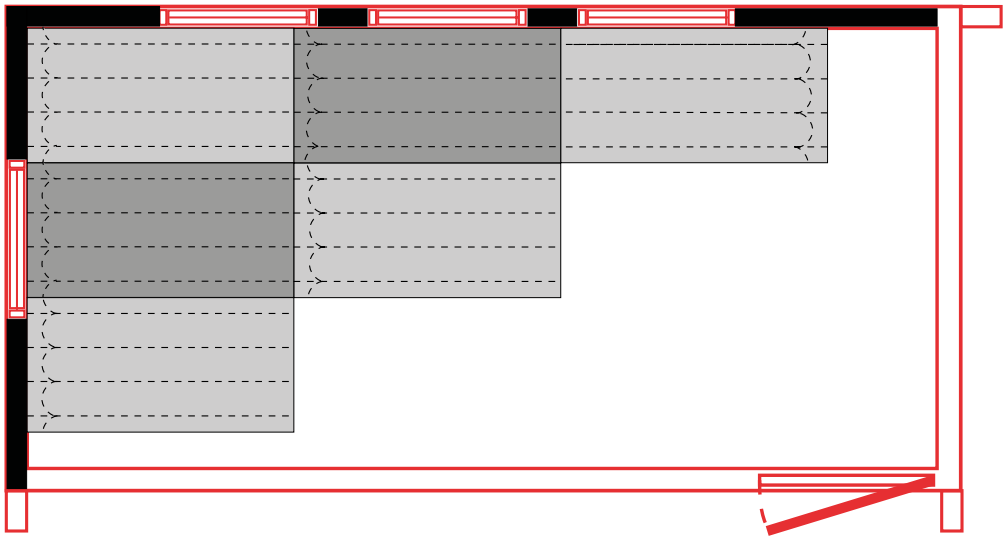
Laying method – procedure

ATTENTION!
Read through this section before starting work.

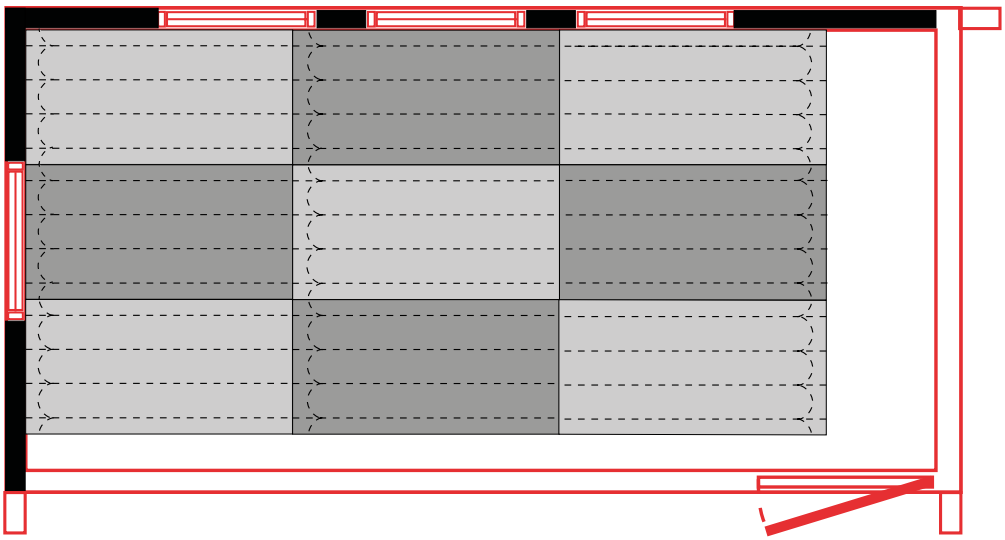
TIP!
Start by installing boards in the room furthest away from the manifold. If some boards need to be cut to fit, use a circular saw or a plunge saw.

Step 1 – Test installation of LK HeatBoard 18 boards

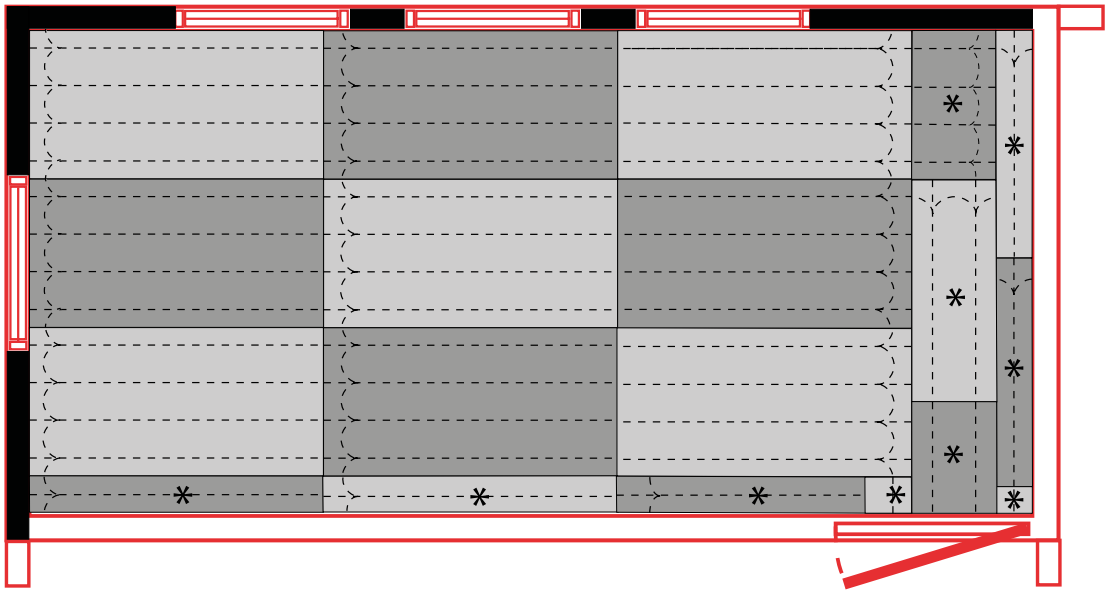
1. Lay out the boards without gluing/attaching the LK HeatBoard 18 boards. In the room, start the installation on a short side that only has pipe turns.



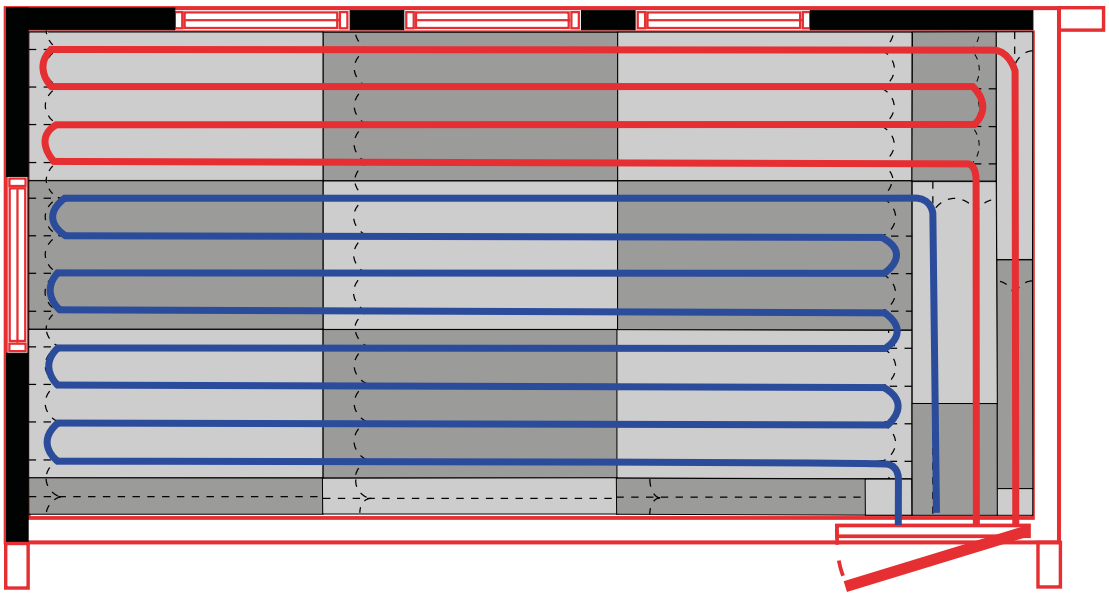
2. Lay out the LK HeatBoard 18 boards along the short side across the entire width of the room.



3. Adjust the pipe turns. It is possible to cut the LK HeatBoard 18 boards lengthwise and widthwise in order to create suitable pipe channels for the supply pipe.



*Example image. The image shows what a test layout may look like. * LK HeatBoard 18 boards that have been cut.*



Example image. The image shows the test layout with pipe system.

Step 2 – Installing LK HeatBoard 18 boards

4. Once all the LK HeatBoard 18 boards have been adjusted and are in place in the test layout, pick them up and select the installation method to be used. Choose from steps 3a, 3b on the next page.
5. Lay out the boards again.
6. Work from the short side towards the room's connection point, i.e. where the pipes arrive in the room.

Installation methods

NOTE! Any deviations between recommendations
Note that the text in this section only contains general recommendations. If LK Systems' recommendations and those of the floorfix and floor glue manufacturer differ, follow the manufacturer's instructions.

Step 3a – Gluing with water-based floor glue

TIP! Floor glue
If LK HeatBoard 18 boards "glide" on the adhesive when the boards are laid out, you have laid them out too early. Allow the adhesive to get a little more sticky. If the floor glue has dried too much, add a new layer of adhesive to the old one, as the adhesion will be poor otherwise.

See ***"Installation, primer and fix in dry rooms – Table 1."*** for recommended floor glues. Read the relevant supplier's instructions for correct installation. Water-based floor glue should be applied using a glue spreader. Consumption: 3-5m²/litre. The humidity in the concrete sub-floor should never be greater than 85 %.

1. Work in sections so that you can walk on the floor without stepping in the glue. It is best to start at the furthest point in the room.
2. Allow the floor glue to dry until it gets sticky. This will ensure a better bond when the LK HeatBoard 18 boards are laid. This can take between 10 minutes and half an hour, depending on the sub-floor, adhesive brand and room temperature.
3. Gently walk on the LK HeatBoard 18 boards so that they stick fully to the sub-floor.

Example Using a Water-Based Product from Kiilto

NOTE!
Direct bonding to concrete is not possible. A self-levelling compound that acts as an alkaline barrier, with a minimum thickness of 5 mm, must be used. The concrete must be dry, with a maximum relative humidity (RH) of 85%. Contact Kiilto for advice regarding the correct product and application method.

Apply in accordance with Kiilto's instructions:

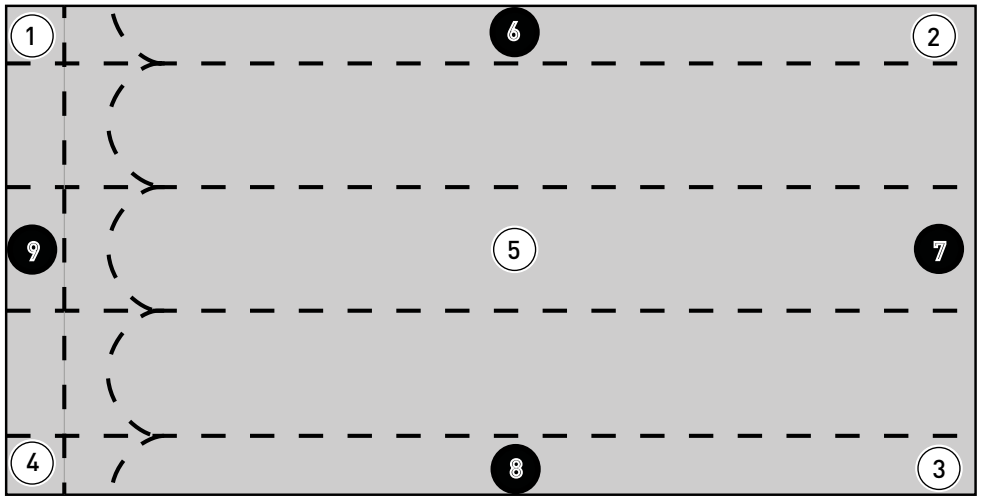
- Adhesive: Kiilto M1000 or Kiilto Floor Plus
- Notching: A1
- Coverage: 4–5 m²/l
- Application method: Semi-wet bonding

TIP!
Weight the boards approximately 15–30 minutes after installation to prevent them from lifting due to the adhesive moisture or an uneven sub-floor.

Step 3b – Installation to the sub-floor using screws

NOTE!
Screws with large heads are preferable, as they help distribute the load.

1. Select screws suitable for the sub-floor, e. g. mounting screws. Screws with large heads are preferable, as they help distribute the load. Use at least 5 screws positioned according to numbers 1 to 5. If necessary, add additional screws positioned according to numbers 6 to 9 in the image.



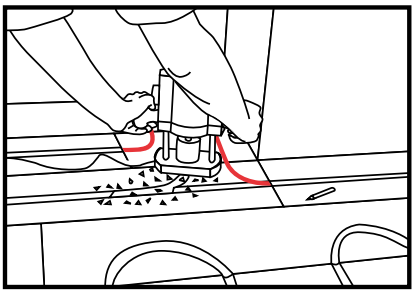
2. Lay the LK HeatBoard 18 board in place and adjust if necessary.
3. Attach the LK HeatBoard 18 board to the sub-floor. Make sure that the screw head is countersunk into the LK HeatBoard 18 board so that the screw does not risk contact with the future floor covering. Check the countersink of the screw heads by running a try square or ruler over the board. screw length max. 32 mm.

Step 4 – Supplement with new pipe channels

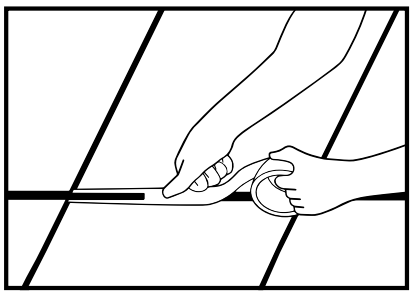
Boards
Before starting to cut/mill new pipe channels, make sure that any glue has dried and that the LK HeatBoard 18 boards are properly secured to the sub-floor.

Pipe channels
Arrange so that the underfloor heating pipe's supply and return pipes have pipe channels. If necessary, add new pipe channels.

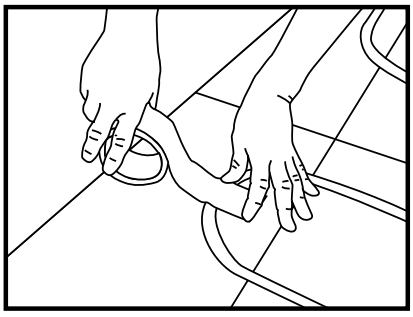
1. Mark the intended path for the pipe channel using a pen. The bend in the pipe must not be too tight. The minimum bend radius for 16 mm pipes is 90 mm.
2. Cut the new pipe channel using a plunge router. A suitable dimension is a 16 mm router cutter.



3. Fold the LK Aluminum Tape into the overhand milled pipe groove before mounting the underfloor heating pipe.



4. To attach the underfloor heating pipes, tape the pipe down using LK Aluminium Tape.



LK Manifold

ATTENTION!
Read through the manifold's assembly instructions before starting to install it.
See www.lksystems.se/en/. The manifold is assembled in the designated place as per the drawing.

Laying the pipes

The pipe lay-out must be done as per the drawing. Check that the turning channels to be used are prepared for pipe laying. If necessary, cut the foil with a knife. Check that the foil is folded down into the turning channel.

1. Before starting to lay the pipes, check that the pipe channels/surface are free of debris. Vacuum clean if necessary.
2. Number and name the loops as per the drawing.
3. Cut the pipe using pipe cutters designed for underfloor heating pipes.
4. Press the pipes into the pipe channels, with your foot if necessary.
5. You can also use LK Aluminium Tape in the pipe turns and when the pipe sticks up out of the LK HeatBoard 18 board.
6. Note the direction of flow in the loop so that the supply pipe runs along outer walls.

Installation of flooring material

RISK! Loose LK HeatBoard 18 boards
Check that the LK HeatBoard 18 boards are properly secured. Attach any loose LK HeatBoard 18 boards before starting tiling or laying a floating floor.

NOTE! Any deviations between recommendations
Note that the text in this section only contains general recommendations. If LK Systems' recommendations and those of the manufacturer of the surface layer differ, follow the manufacturer's instructions.

Once the underfloor heating system has been installed and pressure-tested, it is time to lay the surface layer. **When the surface layer is being laid, the underfloor heating system must have been shut off.**

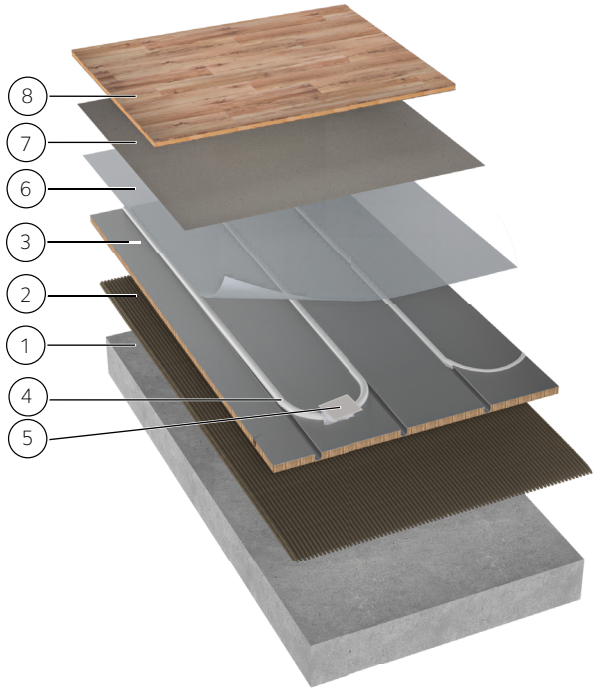
Before starting to lay the surface layer, make sure that:

- The LK HeatBoard 18 boards are securely adhered to the sub-floor.
- The installation is not springy.
- The installation does not make a noise against the sub-floor.
- The pipes are situated correctly in their pipe channels.

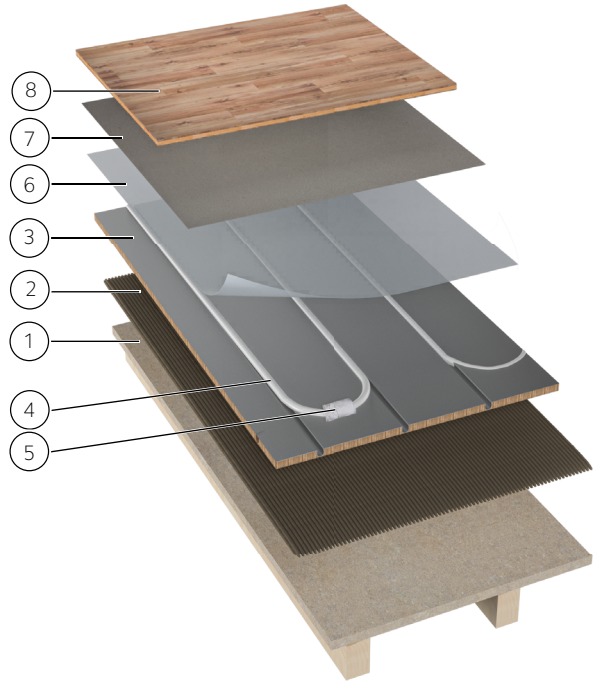
Other types of flooring material

Floating floors can have various types of flooring material, such as vinyl flooring or various wood products. An intermediate layer is required when laying vinyl flooring.

Construction principle



1. Concrete.
2. Glue recommended by the supplier.
3. LK HeatBoard 18.
4. LK Underfloor Heating Pipe in diameter. 16.
5. LK Aluminium Tape.
6. Vapour barrier.
7. Paper felt.
8. Wooden floor.



1. Wooden joists with chipboard.
2. Screw or glue recommended by the supplier.
3. LK HeatBoard 18.
4. LK Underfloor Heating Pipe in diameter. 16.
5. LK Aluminium Tape.
6. Vapour barrier.
7. Paper felt.
8. Wooden floor.

Wood products

ATTENTION! Expansion gaps
Follow the flooring supplier's instructions. When laying wood products onto underfloor heating systems, ***it is especially important to follow the instructions in terms of expansion gaps***.

ATTENTION! Industry guidelines
Industry guidelines can be downloaded from the website of the Swedish Flooring Trade Association (GBR) www.golvbranschen.se/hem/about-us in the form of a handbook entitled "Trägolv på golvvärme" (Wooden flooring on underfloor heating systems). (GBR, edition 3: 2022).

ATTENTION! Flooring thicknesses above 25 mm
Adhere to the flooring manufacturer's instructions and the guidelines from the Swedish Flooring Trade Association for wood floors on underfloor heating. Seek advice from LK if the flooring thickness exceeds 25 mm.

Requirements

- Underfloor heating means that the wood dries out more during the period of the year when the heating is on compared to if underfloor heating has not been installed.
- The underfloor heating will cause slightly larger gaps between the floorboards during the driest winter months.
- As a rule, a vapour barrier (polythene with a thickness of 0.2 mm) should be laid over the underfloor heating system first. A layer of paper felt, Airolen (foamed plastic) or cork underlay should then be laid.
- The underfloor heating should first be covered with a vapour barrier as per the floor supplier's instructions, and then paper felt or cellfoam. ***Adhere to the floor manufacturer's instructions and the instructions from the Swedish Flooring Trade Association for wood floors on underfloor heating.***

Laminated parquet

ATTENTION!
Follow the flooring supplier's instructions. When laying wood products onto underfloor heating systems, it is especially important to follow the instructions in terms of expansion gaps.

- Normally, LK HeatBoard 18 is covered with a vapour barrier. Paper felt is then placed on top. The laminated parquet is laid floating on top of the paper felt.

Laminate and click lock flooring

ATTENTION!
Follow the flooring supplier's instructions. When laying wood products onto underfloor heating systems, it is especially important to follow the instructions in terms of expansion gaps.

NOTE! Floating installation and laminate floor thickness
8 mm is the minimum thickness of the laminate floor when an intermediate floor is not laid.
6 mm is the minimum thickness of the laminate floor when an intermediate floor is laid.
Laminate flooring must be laid floating if it is thicker than 8 mm.
Laminate floors that are at least 8 mm thick can be laid directly against the LK HeatBoard 18 board.

- The underneath of some laminate flooring is covered with a sliding layer, such as cork, paper felt or cellfoam and can be supplemented with a vapour barrier. Paper felt is preferable due to its lower heat resistance.

Solid wood (floorboards)

ATTENTION!
Follow the flooring supplier's instructions. When laying wood products onto underfloor heating systems, it is especially important to follow the instructions in terms of expansion gaps.

- The wooden floorboards must be laid at right angles to the main direction of the pipe loop.
- The thermal conductivity of the wood is almost twice as great in the direction of the grain compared to the radial direction. Using the natural properties of the wood in this way ensures a more even surface temperature.

Plastic mats

NOTE! When an intermediate layer is required
An intermediate layer is required when laying vinyl flooring and LVT (Luxury Vinyl Tiles).
Paper felt must be laid before the intermediate layer is laid.

There are various types of vinyl flooring, e.g:

- LVT (Luxury Vinyl Tiles), also known as PVC flooring. An LVT floor consists of easy-to-handle boards or tiles that can either be laid floating (i.e. without glue) or glued.
- Plastic, vinyl and linoleum flooring. These are supplied on rolls and are securely glued to the surface.

The properties of the flooring Before laying the flooring, always check the floor supplier's recommendations.

- If the flooring is flexible and pliable, it should be handled as "vinyl flooring", and LK recommends laying a hard board (intermediate layer) on top of the LK HeatBoard 18 boards.
- If the vinyl flooring is a thicker variant that has an MDF/HDF backing, it may be possible to lay the floor floating in the same way as for laminate flooring.
- It is important that the intermediate layer is thin and has good thermal conductivity so that it can transfer the heat upwards effectively. For instance choose 6 mm "Funktion Mellangolv" from Moelven, 7 mm Forbo Quickfit or equivalent.
- If you choose a floating chipboard sub-floor, the minimum thickness must be 10 mm or 16 mm, depending on the load category/building type. In public buildings, it may be necessary to use a stronger/thicker intermediate layer due to the higher load. In public buildings, there may be a need to use a stronger/thicker one. Contact a structural engineer or other expert in case of uncertainty.

Storage and Stacking

- LK HeatBoard sheets have no limited shelf life and can be stored for an extended period if properly maintained.
- To preserve dimensional stability, the sheets should be stored flat in a controlled indoor environment, protected from direct sunlight and moisture. Optimal storage conditions include a relative humidity of 50–55% and a temperature of 18–23 °C. In cases of significant temperature fluctuations, remove the plastic cover from the pallet to prevent condensation.
- Pallets of the same size can be stacked in pairs.

Environment/recycling

Once the LK HeatBoard 18 boards reach the end of their life, they should be sorted for energy recycling and taken to a recycling centre.

Miscellaneous

Protection during transport: During transport and storage, the discs must be protected against dirt and moisture. The boards must be transported and stored on a flat surface. LK HeatBoard 18 must be stored indoors.

Technical data

Essential properties	Performance	EN-Standard
Thermal conductivity	λ_D = 0,075 W/mK	
Thermal resistance	0,24 m²·K/W	
Compressive stress at 10% deformation	1289 kPa (At 30% RF)	SS-EN 826 2013 EN
Bending strength		
Shear strength		
Shear strength, long term (2 %)		
Fire class (Reaction to fire)	NPD (Euroclass F)	
Continous glowing combustion	NPD	
Durability of compressive strength against ageing/degradation – Freeze-thaw resistance	NPD	
Tensile strength	NPD	
Impact Sound Insulation Heatboard 18 – Parquet	19 dB	SS-EN ISO 10140-3

NPD = Non Proven Data

Dimension drawings