

INSTALLING UNILIN FLOORING ON FLOORHEATING/FLOORCOOLING

TO OBTAIN THE BEST RESULT, THIS GUIDE MUST BE CAREFULLY FOLLOWED BY ALL PARTIES. LOCAL REGULATIONS AND STANDARDS REGARDING FLOORHEATING/FLOORCOOLING OR SITE CONDITIONS MUST BE FOLLOWED IF THEY ARE STRICTER.

GENERAL

Unilin Floors* can be used in conjunction with "low-temperature" floor heating. Your Unilin floor can be installed on both water based systems** and electrical system (check compatibility in the table on page 4)

"Low temperature" floor heating can be defined as a floor heating system where the surface temperature of your installed Unilin floor is maximum 27°C. In new or renovated, well- insulated buildings, this temperature can be lower in most cases.

The floor heating must be installed in accordance with the supplier's instructions and the generally accepted instructions and rules. The detailed conditions below must be followed. Of course, the general laying guidelines for your Unilin Floor still fully apply. The use of the correct Unilin accessories is also essential. The use of inappropriate accessories (eg. underlays) can be harmful to your floor.

* Unilin Wood Flooring with a top layer made from Ash, Spotted Gum or Blackbutt is NOT suitable for laying on floor heating.

** The heat source for hot water systems can be either a traditional boiler, heat pump or an aerothermal system.

GENERAL POINTS OF ATTENTION

- Even heat distribution is required
- The maximum permitted surface temperature on top of the Unilin Floor is 27°C.
- ALWAYS change the temperature GRADUALLY.
- The relative ambient air humidity must be kept within the limits mentioned in the general installation instructions.
- Always avoid heat accumulation. E.g. caused by carpets or rugs, or by insufficient space or ventilation between furniture and the floor.
- Zones with different floor temperatures (eg. zones with separate controllers, zones with and without floorheating,...) must be decoupled with an intermediate expansion joint and profile
- Always ensure a vapour barrier in case of a risk of rising moisture
- Ensure a correct start-up and shut-down procedure for your system
- Open joints may appear during the heating season on wood-based flooring.

PREPARATION

The floor base must be sufficiently DRY when laying the floor covering.

Wet heating systems

Below table gives an overview of the maximum moisture content of your base floor.

PRODUCT	WITH FLOORHEATING	WITHOUT FLOORHEATING
Cement Screed	1,5 % CM (60% RH)	2,5 % CM (75% RH)
Anhydrite Screed	0,3 % CM (40% RH)	0,5 % CM (50% RH)

The prescribed moisture content will only be achieved by turning on the heating on beforehand. In the case of a new screed, you must wait at least 21 days between spreading the screed/floor finish and starting the heating. For newly spread screed/floor finish, follow the guidelines of your installer. Keep the protocol of subfloor heating and subfloor mc measuring.

Start the floor heating at least two weeks before laying your Unilin Floor. Raise the floor temperature by no more than 5°C per 24 hours. In both hot water and electrical systems, if you can leave the heating on for longer, this would certainly be better.

In case of glue usage during the floor installation, turn the floor heating off completely at least 24 hours in advance. When installing a vinyl floor, it is necessary to make sure that the ambient temperature is above 18°C. If the ambient temperature is lower than 18°C, you'll need to use alternative heating during the installation phase to reach the 18°C threshold.

AFTER laying your floor, you must wait AT LEAST 48 hours before restarting the heating, gradually (5°C per day).

Dry heating systems

When installing dry heating systems, it may be required to have a vapor barrier between your Unilin Floor and your heating system. This is mainly the case for electrical dry heating systems. We advise you to check this with your floor heating supplier. When installing dry heating systems on the ground floor, you'll need an additional vapor barrier between your subfloor and your heating system. In the case of dry heating systems, the moisture content of your subfloor can be the same as in a situation without floor heating.

PRODUCT	WITH FLOORHEATING	WITHOUT FLOORHEATING
Cement Screed	2,5 % CM (60% RH)	2,5 % CM (75% RH)
Anhydrite Screed	0,5 % CM (40% RH)	0,5 % CM (50% RH)

Dry heating systems are not embedded in any screed, which means they don't have a start-up procedure before installing your Unilin Floor. Therefore, you can install your Unilin floor immediately without any start-up procedure.

INSTALLATION

In case of a GLUED installation (only Unilin Wood Flooring and glue down Vinyl Flooring)

When using glue, we advise to install your Unilin Floor with suitable wood or vinyl glue. This method gives the highest degree of heat transfer and thus ensures the optimum efficiency of your heating system. On the other hand, there is no vapor protection and there is a risk of condensation. Issues related to subfloor moisture can be avoided by using a suitable liquid damp proof membrane.

When using "wet system" floor heating, the screed will have expansion joints. In a glue down installation it is also necessary to copy the expansion joints of the subfloor to the floor you want to install.

In case of a FLOATING installation (not possible for glue down Vinyl flooring)

The most suitable underlay between your heating system and your Unilin floor, is the underlay with the lowest thermal resistance. However, the heat output of the heating system with floating installation is smaller and the yield is slightly lower compared to a glued installation. On the other hand, an underlay with integrated vapor barrier can stop rising damp or condensation. An ideal installation has a total R-value that doesn't exceed 0,15 m² K/W.

The value of the thermal resistance R of the various layers can be easily calculated using the following formula:

$$R = d / \lambda$$

R = thermal resistance (in m² K/W)

d = thickness of the material (in m)

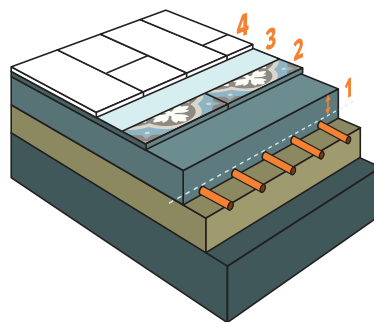
λ = heat transfer coefficient / thermal conductivity = material constant (in W/mK)

To calculate the total thermal resistance (R-value) of a floor construction, you sum the R-values of all individual layers in the build-up which are situated on top of the floor heating system. Each layer (e.g. the concrete floor, the ceramic tile, the underlay, the Unilin Floor,...) has its own R-value, depending on the material and thickness. To find the corresponding R-value of each material, consult the technical data sheet of the material.

Example for a renovation on top of a ceramic floor: R-Value calculation of a floor build-up

1. R-concrete floor (50 mm): $\approx 0,005 \text{ m}^2 \text{ K/W}$
2. R-ceramic tile (10 mm): $\approx 0,010 \text{ m}^2 \text{ K/W}$
3. R-underlay: $\approx 0,045 \text{ m}^2 \text{ K/W}$
4. R-Unilin Floor (8 mm): $\approx 0,055 \text{ m}^2 \text{ K/W}$

Total R-value = $0,005 + 0,010 + 0,045 + 0,055 = 0,115 \text{ m}^2 \text{ K/W}$
(within the maximum limit of $0,15 \text{ m}^2 \text{ K/W}$)



GENERAL POINTS OF ATTENTION FOR SPECIFIC FLOORING TYPES

	LVT	LAMINATE	WOOD/LUMIC	
	Rigid Click', Flex Click, Flex Glue/Dryback, LooseLay	Floating	Floating	Glued
1	Suitable with a screed of at least 40 mm on top. Max distance of 20 cm between pipes to maintain a homogeneous temperature spread.			
2	Suitable with a screed of at least 20 mm on top. Heat close to flooring. Max distance of 12 cm between pipes to maintain a homogeneous temperature spread.			
3	Suitable if you first apply an intermediate layer'' (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) Build-up: Heating system + intermediate layer'' + (underlay if necessary for flatness') + Floor	Suitable if you first apply an intermediate layer''. (eg. Jumpax, connected gypsum or cement boards, ...) Build-up: Heating system + intermediate layer'' + underlay + Floor	No reason to do this but suitable if you first apply intermediate layer''. (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) of at least 12mm thickness which creates one stable base to glue down. Attention: Due to the intermediate firm base'', the R-value of the build-up will be above the advised limit.	
4	Suitable with standard Floor Heating instructions.			
5	Flexible levelling compound Critical. Ensure homogenous temperature depending on thickness of the screed over heating elements. Max 80 W/m²''.	Flexible levelling compound Suitable. Max 140 W/m².		
6				
7	Suitable with intermediate layer'' (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) Max 100 W/m². Build-up: Insulating underlay of min. 6mm + Heating film + PE foil + intermediate firm base layer'' + (underlay if necessary for flatness') + Floor	Suitable. Build-up: Insulating underlay of min. 6mm + Heating film + PE foil + Floor. Max 140 W/m².	No reason to do this but suitable with intermediate layer'' (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) of at least 12mm thickness which creates one stable base to glue down. Max 140 W/m². Build-up: Insulating underlay of min. 6mm + Heating film + PE foil + intermediate firm base layer'' + Floor. Attention: Due to the intermediate firm base'', the R-value of the build-up will be above the advised limit.	
8	Suitable with intermediate layer'' (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) Max 100 W/m². Build-up: Heating system + intermediate firm base layer'' + PE foil + (underlay if necessary for flatness') + Floor	Suitable with intermediate layer'' (eg. OSB with T&G glued, Jumpax, gypsum, cement board...). Max 140 W/m².		
9	Not Suitable	Only suitable IF cable thickness is max 3mm, Max 140 W/m², Suitable underlay underneath heating system to embed heating cables.	Suitable with intermediate layer'' (eg. OSB with T&G glued, Jumpax, connected gypsum or cement boards, ...) of at least 12mm thickness which creates one stable base to glue down. Max 140 W/m². Build-up: Insulating underlay of min. 5mm + Heating system + intermediate firm base layer'' + floor. Attention: Due to the intermediate firm base'', the R-value of the build-up will be above the advised limit.	
10	Not Suitable			

* When an underlay is already attached to the product, an additional underlay is not allowed!

** Intermediate layer: firm base, hard, even, non-deflecting layer with a low thermal resistance, creating a rigid and continuous fixed/connected base that ensures load distribution and prevents movement between adjacent pieces under point load.

*** Perfect system to be used for additional heating and to provide comfort.

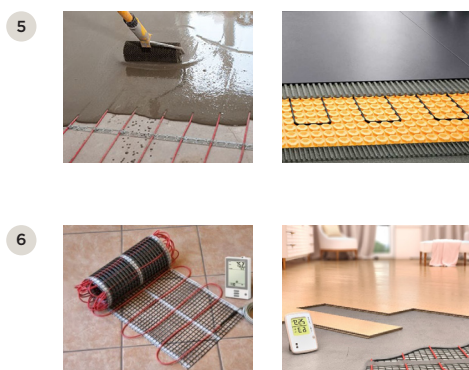
WATER BASED SYSTEM - WET SYSTEMS



WATER BASED SYSTEM - DRY SYSTEMS



ELECTRICAL SYSTEM - WET SYSTEMS



ELECTRICAL SYSTEM - DRY SYSTEMS



FLOOR COOLING

A combination of heating in winter and cooling in summer can for technical and physical reasons be problematic in combination with organic floorings in general and with parquet in particular.

If floor cooling would be applied, the main attention point is that an advanced regulation and security system is used to prevent internal condensation (dew point regulation). To prevent damage to the floor, the incoming temperature of the cooling water must NOT be lowered without limit and it must never fall below the dew point temperature (depending on relative humidity and air temperature conditions). Lower temperatures lead to condensation in the floor and can cause damage to the Unilin Floor, such as cupping, distortions, swelling and joints opening.

A proper safety system includes automatic sensors that detect when the dew point (= start of condensation) is reached below or in the floor and then regulate the cooling to always remain above the dew point.

As a general guideline, the following suggestion can be followed:

Room thermostats must never be set to a temperature that is 5°C lower than the room temperature. As an example, when the room temperature is 30°C, the room thermostat should not be lower than 25°C. The cooling circuit must be provided with a regulator that prevents the cooling fluid from falling lower than 18 to 22°C. This depends on the climate zone in which the floor has been laid. In zones with a high relative humidity, the minimum is 22°C; with average humidity and temperature, the temperature can drop to 18°C. Failure to follow these instructions renders the Unilin warranty no longer valid.

For floor cooling, a heat-resistance of $< 0.15\text{m}^2 \text{ K/W}$ is prescribed. In case the total Heat resistance of your Unilin Floor and your Unilin underlay is higher, account should be taken here of a certain loss of capacity.

FINAL NOTE

All the above mentioned aspects must be examined by the distributor/installer of the heating system. It is their responsibility to ensure that the underfloor heating system has been installed correctly and works in unity with the aforementioned guidelines which must be followed in full.

We trust that the foregoing will provide you with sufficient information. Should you have any further questions or problems, please do not hesitate to contact our technical department.

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