

Underfloor Heating Guidelines

Before

You should get a certificate from the company that fitted the UFH system to ensure that it is fully operational with controlled temperatures so that the surface temperature does not exceed 27 degrees centigrade. The only way to control the surface temperature of the screed is with flow control valves and not thermostats.

If no certification is available from the installer.

- Before the floor is fitted the under-floor heating system should be calibrated back to the boiler to ensure the surface temperatures of the sub floor is correct.
- If there is no certification it may well invalidate any guarantees that apply to the wooden flooring.
- ***If the advice provided is not followed, then any warranties on our flooring maybe invalid. Please see our terms and conditions and fitting guidelines.***

Choice of System

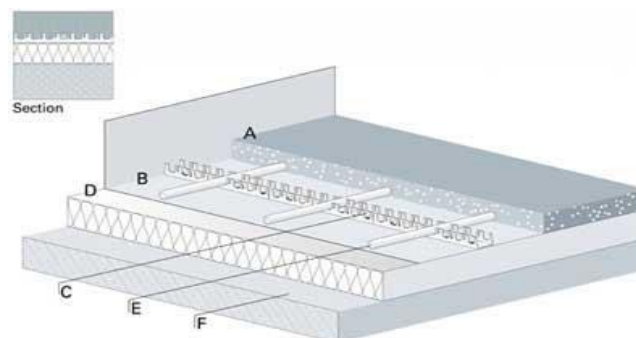
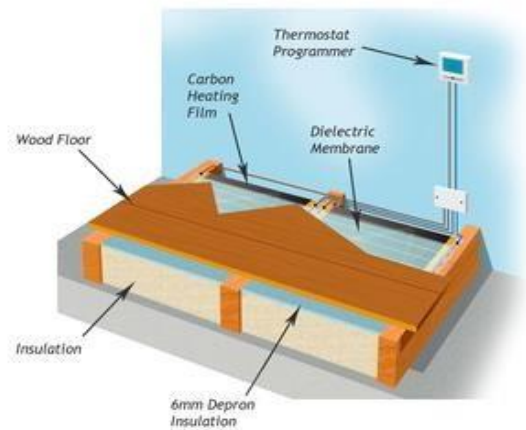
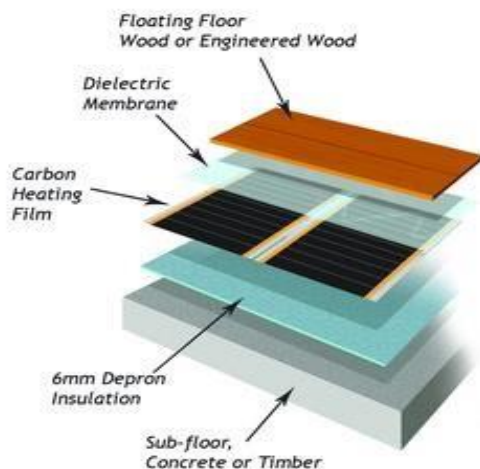
Your choice of a UFH system will depend on your current sub floors, height restrictions and what you want the system to do for you.

Electric carbon film and mat systems are acceptable for **background only**.

Hot water systems are generally more efficient and when you glue a wooden floor directly to the heated screed you get the best floor with the warmest touch.

A lot of hot water systems do not control the boiler temperature properly which can lead to hot spots and other issues affecting the floor. A typical boiler will heat water to about 82 degrees which is much too hot for pipes in an underfloor heating system.

The surface temperature of the screed for wood flooring must never exceed 27 degrees centigrade.



Legend:

A Screed	D Insulation
B Vapour Barrier	E Underfloor Heating Pipe
C Pipe-Rail	F Oversite Slab

Choice of Wooden Floor

All our Engineered Oak floors are a perfect match with UFH, and the choice will be purely based on personal taste and what matches your budget and decor.

Concrete and Anhydrite Screeds

Many installations are failing, because of the highly specific requirements needed to ensure your UFL and new floor perform for years to come.

Anhydrite screeds are a mixture of screeding sand and binder and are more porous than concrete screeds; these **should NOT** therefore be sealed with a DPM before installing wood flooring because as Anhydrite screeds are gypsum based and any moisture kept in the screed will break down its structure. We recommend you have a concrete screed which ideally should be between 60mm and 70mm which allows a more consistent heat dissipation. General cement and Anhydrite screeds dry out at the rate of 1mm per day.

We recommend a normal concrete is best for UFH.

If you have any sand and cement type screed you should **always seal the surface with a damp proof membrane (DPM)** It protects the screed against moisture penetration from the surface and prevents any potential long-term problems.

Sub Floors and Joists

All sub floors must be prepared in accordance with normal **sub floor** preparation procedures.

Before fitting the wood flooring, particular attention must be paid to ensure that: -

- Moisture content of your new floor must not exceed 10%. We test the moisture reading of your flooring at the time of packing and keep a log
- The moisture content of the sub floor
 - concrete screed must not be higher than 1.8 %
 - Anhydrite no more than 0.5%
 - Cement no more than 2%
 - Wooden no more than 10%
- Evenness – maximum tolerance of 3mm per linear metre where the maximum deviation in flatness in any direction is 3mm under a 3-metre straight edge.
- Load capacity – The sub floor must be a closed and self-supporting surface.
- Cleanliness – the sub floor needs to be in a clean and vacuumed condition.
- Any plywood or Chipboard subfloor must be high quality and also sealed.
- Joists must be in good condition and not more than 350mm centres.

Installation of UFH

This should be left to qualified installers recommended by the manufacturer of the UFH system and you must have “flow” control valves to ensure that the temperature never exceeds 27 degrees where the wood floor meets the screed.

You cannot achieve this with thermostats. The best system is to have sensors fitted into the screed that will turn the system off if the surface temperature exceeds 27 degrees.

Main points to watch out for are:

- Hot water pipes must be at least 65mm below the top surface of the screed to ensure you get an even heat distribution and no “hot spots”
- There must be sufficient insulation below the UFH and also a good DPM to prevent heat loss and moisture being drawn up through the screed
- Ensure that you meet all building regulations and terms and condition of the UFH system manufacturer, do not take short cuts to save money as the longer-term costs could be enormous.
- NEVER dry the screed out by using the underfloor heating system you will destroy the integrity of the cement screed.
- If you have reduced the underfloor heating pipe spacing on perimeter areas, for example where there are a lot of windows it is advisable to have a high-quality engineered wood floor to stop any chance of problems in the future, in addition leave additional spacing around the perimeter.

Commissioning an UFH system before installing a wooden floor. You must never install a wooden floor before commissioning the system as set out below.

- To gain the best performance from your heating system and the finished floor it is important to have all components working together.
- Hot water radiant underfloor heating system must be installed in conjunction with the manufacturer's guidelines and commissioned and run for 3 weeks to ensure that the system is fully operational.
- The screed must have a moisture content less than 1.8% before the underfloor heating system is started up. If the screed is 75mm then in normal weather conditions this will take at least 75 days to cure and dry out.
- Set the water temperature in the pipes to 20 degrees Celsius on the first day, and then gradually increase by a maximum of 5 degrees Celsius every 24 hours, up to a max. 45 degrees Celsius. This maximum temperature must then be maintained for approx. 8 days. This is controlled by flow valves and not thermostats.
- Then reduce the water temperature in the pipes in the reverse order over 8 days.
- During this procedure ensure that there is good ventilation in the room so that any moisture will be released and can be correctly discharged.
- After commissioning, the installer should provide documentary evidence of commissioning; particularly the temperatures achieved at the finished sub floor, and these should be available to the trades that follow. This documentation should fully explain how the surface temperature of the screed is controlled by the flow valves.

Flow Temperature Controls.

Unless a condensing boiler with a low temperature control is being installed then a mixing valve is used to reduce the temperature of a normal boiler which is 82 degrees down to about 50 degrees which will give a surface temperature on the screed of about 25 degrees depending on the pipe spacing. This is the safe way to control the system. In more advanced controllers, called weather compensators, use an external sensor and programmer to adjust flow and temperature to compensate for outside conditions. It is vital to have a device to control the boiler and pump to prevent flow temperatures exceeding safety limits. There are new sensors that are part of the subfloor and will turn the system off if it gets to 27 degrees at the surface. We would advise installing a fidbox, which provides reliable information about the environmental conditions of your hardwood flooring. The fidbox is installed under the flooring and measured from below the temperature and humidity fluctuation in the floor construction and the subfloor.

Acclimatisation of wooden flooring

Before starting the installation, the 16 or 20mm Engineered floor boards need to be brought into the room where they will be installed after the 3 weeks initial running period for the UFH, and exposed to the climatic conditions.

The acclimatisation will comprise: -

- All wet trades must have finished and screeds dry with moisture levels below 8% and humidity below 65 %
- The UFH system must have been commissioned and turned on.
- The boards should be laid flat at least 300mm from the nearest wall
- There must be some battens under the bottom layer of cartons so that air can circulate.
- The room temperature must be at least 18 degrees C.
- The floor surface temperature must be a minimum of 15 degrees C.
- The air relative humidity must be between 45% and 65%.

CRITICAL: The surface temperature of the screed must never exceed 27 degrees C.

During

Methods of installing a wooden floor with UFH

- Concrete and Anhydrite Screeds: Glue down using MS Polymer Adhesive and leave to dry for a week after fitting before turning on the heating system. The MS Polymer adhesive we use to glue the boards to the screed dries like a hard rubber and ensures good heat transmission.
- Floating Floors for other surface finishes: you should always glue a floor if possible as you will not get such effective heat transfer if you float a wood floor. Make sure that you have a recommended underlay or where you have electric heating that the appropriate barrier between the carbon heating wires is installed and then lay the boards by gluing the tongue and grooves together with a high-quality wood adhesive.
- Secret Nailing or Secret Screwing to Joists: Ensure that there are no air gaps between the surface of the boards and heating system as air is an insulator and you will not get effective heat transference with potential hot spots. THE BOARDS MUST NEVER DIRECTLY TOUCH ANY HOT WATER PIPE.

After

Commissioning the UFH system after the wood is installed.

It is important not to shock the floor by introducing the heat too quickly and after starting the heating system:

Wood flooring will have some moisture in its cell structure and natural oils help to maintain this. If the floor is overheated and allowed to dry too much, then the fibrous nature of the cell structure will start to split.

Once the floor is fitted the system should not be turned back on for at least a week.

Ongoing maintenance and use of the floor and UFH system

Generally, the temperatures should not vary drastically and in a perfect world the UFH should never be turned off just kept at a very low temperature. Always try to avoid taking the floor from **one extreme of heat and humidity to another within a very short timescale**. Ideally the room temperature should be 20 degrees Celsius and not lower than 18 degrees Celsius. The air relative humidity should be between 45% & 65%.

If you do turn off the system and the floor, get cold as it can in Summer then you must turn the system back on in a controlled fashion as you would when commissioning the system after installing the wood floor. If you turn it back on to full heat this will “shock” the wood flooring and could cause lifting or the top layer of engineered boards delaminating.

The maximum temperature of the wooden floor should never exceed 27 degrees Celsius to avoid excessive drying-out problems, which can cause stresses in the wooden floor.

You must also use the recommended maintenance kit to clean and look after your floor.

How to avoid Potential Problems with Wooden Floors and Underfloor Heating

Most of the problems associated with wooden floors and UFH come from the following conditions:

- Dramatic changes in the surface temperature
- Hot spots
- Lack of heat distribution
- High humidity in the room
- Operating the heating above a surface temperature of 27 degrees

If any of the above applies you can get the following wooden flooring reactions

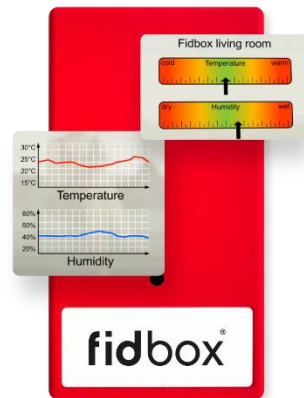
- warped boards
- engineered flooring that will delaminate, this is the top layer coming off
- gaps appearing
- if not fitted correctly you will also find the whole floor lifting
- Lack of effective heat transference through the flooring

How to ensure you do not get problems.

- Always use a professional UFH installer
- Ensure you have the right system to achieve what you want.
- Never buy cheap engineered flooring
- Never install solid wood flooring
- Always use the best adhesives
- Glue the wooden flooring to the screed which has been designed for wooden floor with UFH.
- If you want an electric system then you must follow the manufacturer's installation requirements and make sure you do not get hot spots, some cheap systems will cause this.
- Hot Spots occur where there is no effective reflector plates that spread the heat or where the screed is too thin
- Always leave the UFH system on and do not increase or decrease the temperature excessively.
- You must clean the wooden floor with the appropriate maintenance kits and in accordance with our instructions. For our flooring always use the recommended maintenance kit if you do not then all our warranties and guarantees are invalid.

Fidbox

- The fidbox provides you with reliable information about the environmental conditions of your hardwood flooring. The fidbox is installed under the flooring and measures from below the temperature and humidity fluctuation in the floor construction and the subfloor. The saved data can be wirelessly read at any time from the fidbox without having to remove any of the flooring. It is the "Black Box" data recorder for the flooring industry
- Hardwood flooring is susceptible to extreme changes in temperature and humidity. If moisture levels change too much floors can be ruined costing all involved time, money and reputation.



ThermoPro TP357 Bluetooth Hygrometer Mini Room Thermometer Indoor with Alerts, Humidity Meter and Temperature Monitor with Smart App and Data Recording with Humidity Sensor

- High Accuracy and Fast Refresh: Bluetooth thermometer with smart temperature and humidity sensor is highly accurate for both temperature and humidity readings. The temperature is accurate to $\pm 0.5^{\circ}\text{C}$ while humidity is $\pm 2\%\text{RH}$. Temperature and humidity meter are updated every 10 seconds to keep you informed of the latest changes in the air conditioner.
- Up to 80m Bluetooth Remote Range: Room thermometer nursery contains an enhanced Bluetooth Technology to produce a stable, reliable 80m/260ft Bluetooth remote range (no obstructions) to ensure you'll always have full home coverage.
- Face Icon Comfort Indicators: Indoor thermometer for home features face icons comfort indicate DRY/COMFORT/WET air conditions in an easy-to-understand format and allow you to adjust your humidifier or dehumidifier accordingly
- Smart APP with Alerts: Set a temperature gauge range via the ThermoPro Sensor and instantly receive a phone notification if the temperature or humidity monitor levels fall outside of your range, allowing you to quickly react to make necessary adjustments.
- Up to 1 Year Free Data Storage: Home temperature monitor displays an easy-to-use smart thermometer graph with Maximum 1 year time period so you can analyse your home's historic temperature and humidity data.

