WOOD FLOORS WITH UNDER-FLOOR HEATING

MAFKILDEA Wood Flooring favours the full stick-down method of installation for wood floors over under-floor heating.

Do

• Avoid accelerated drying of new concrete/screeds over UFH as this may lead to poor cohesive strength.
• Check the cohesive strength of screeds before adhering.
• Ensure that screeds, concrete, etc are < 60% RH before installation commences.
• Employ a suitable surface applied moisture barrier (e.g. moisture suppressant primer) where necessary.
• If levelling is required above a suitable primer moisture barrier, apply a purpose-made fine graded aggregate over the second coat of wet primer, allow to cure then vacuum off all loose aggregate; (This will aid adhesion between primer and levelling compound). Then use 'rapid dry formulae' water-mix (i.e. instead of latex mix) levelling compound, as these are typically stronger and develop strength quicker.
• Ensure that levelling compounds are fully cured and dry before installation commences (see manufacturers technical data-sheets).
• Use a purpose made, permanently flexible adhesive such as 1-part polyurethane, or Silicon Modified Polymer, when adhesive fixing.
• Fully-bond, rather than use 'liquid battens' type adhesive systems with UFH.
• Ensure full contact between the underside of the flooring element and adhesive.
• Maintain suitable ambient humidity of 45% RH. (Monitor with a domestic hygrometer.
• Employ a floor temperature sensor.

Provision for expansion

• As a guide only allow a minimum 15mm expansion wherever the floor meets obstacles including perimeters walls, structural supports, hearths etc.
• Create additional expansion breaks in doorways using suitable profiles such as T-section thresholds or transition strips.
• Create additional expansion breaks in large floors.
• Where practical install flooring parallel to the longest walls so that the direction of greatest potential expansion (i.e. across the grain) does not coincide with the direction of greatest dimension, esp. in large floors.
• The precise combined provision for expansion must be judged by the installer taking into account environmental humidity, moisture content of wood at time of installation, timber specie and size of the floor.

- It is recommended that the header joints should be glued on engineered boards when fitting with UFH.

IMPORTANT NOTE

Always check the mutual compatibility of moisture barriers, primers, aggregates, levelling compounds and adhesives before installation.

Don't

• MAFKILDEA Flooring does not recommend solid wood floorings for UFH applications, or high movement hardwood species such as Beech.
• Don't allow humidity below 45% RH, or above 65% RH. (A small domestic humidification unit can be employed to avoid low humidity if necessary.
• Don't allow the floor temperature to exceed 27 Celsius, (including under rugs).
• Do not use thick insulating rugs. (Note: as this will lead to high floor temperatures).

Golden rules for success!

Good control systems are essential; never exceed a surface temperature of 27o Celsius at a room temperature of 18-22o Celsius
Operate the system constantly at 70% of its maximum permitted temperature for 2 weeks prior to installation.
Get the sub floor flat, undulations in the sub floor will cause poor contact to the heated sub floor resulting in cold spots, they may also cause squeaking and gaps.
Use a membrane and install it as close as possible to the floor.

Remember that the maximum surface temperature permitted of 27o Celsius should not be exceeded (even under rugs and furniture)

Site conditions and installation

Heating systems under wooden flooring are normally low temperature water based systems but electrical systems may also be used. The most essential elements of any good underfloor heating system are accurate temperature control and even temperature distribution. It is essential that the surface temperature of the floor stays below 27o Celsius (at a room temperature of 18-22o Celsius) or excessive shrinkage may occur. Please note: Floors that are produced out of Beech and Maple are more sensitive to changes in their moisture content than other species and shrinkage will be more noticeable during harsh winters. In the design stage calculations of the heating requirement for the building will define if underfloor heating will perform satisfactorily as the only source of heating. As a guideline the maximum energy output from the floor will be in the region of 100W/m2 based on a maximum surface temperature of 27o Celsius. In the event that a higher output is required supplementary heating will need to be specified. Before the floor can be laid, it is essential that the heating system is operated at 70% of normal output for 2 weeks prior to installation, this ensures that the system is operating correctly and helps to remove residual screed moisture from screed based systems and ensures that the control systems function correctly. Please note that where the heating pipes are housed in polystyrene or clipped to battens or joists it is essential that heat distribution plates are used. The flooring should be allowed to attain the same temperature as the room in which it is to be installed. This may take 2-3 days in winter and we would advise spreading the packs around the room rather than placing them in one stack. Please note that you should not open sealed packages until the installation process has started. Ambient room temperature should ideally be in the range of 18-22 o Celsius and relative humidity should be in the normal range for the building in use. (35-65% RH) The sub floor should be flat and deviations greater than +- 3mm over a 2 metre straight edge (+- 2mm over a 1 metre straight edge) must be corrected. A surface membrane of 0.2mm age resistant polythene should be laid over the sub-floor prior to installation with a 20cm overlap between adjacent sheets. Please note this should be as close to the underside of the wooden floor as possible. Most underlay's designed for wooden floors are suitable for use over underfloor heating but it should be remembered that thicker underlay's will act as an insulation and may slow down the response time for the heating system. We would recommend consulting the underlay manufacturer for specific information relating to thermal resistance/conductivity. If the installation requires full bonding, care must be taken to ensure that the sub-floor is strong enough to withstand the forces imposed during expansion by performing a scratch test (10mm spacing between lines) weak surfaces must be repaired before installation can commence.

Suitable products

Within our product file you will find a large number of products that are suitable for use over underfloor heating and an equally large number that are not. When selecting products to recommend we rely on our knowledge of wood and the experience of our suppliers. We do not take risks and will only recommend those products, which experience shows will not fail in normal use. All products must be installed in accordance with our recommendations and the heating system must be operated in such a way as to ensure that the temperature of the floor stays within prescribed limits.

Movement

Wood is a hygroscopic material it strives for moisture balance and will quickly absorb atmospheric moisture (humidity) until its moisture content is in balance with the background relative humidity. All materials supplied are machined to a defined size and they will be flat and to size when the moisture content of the material is the same as the day it was machined, if the materials dry, shrinkage will occur and if the moisture content increases they will swell. In some cases the construction of the board helps to control movement (engineered materials) and with some of the solid materials the quality of the drying process combined with a narrower board width reduces the amount of visible shrinkage to acceptable levels. Finally with solids it is possible to obtain more stable raw material by selecting radially cut material. (Quarter sawn) A limited range of this type of material is also classified as being suitable. It is important to recognise that all wooden floors will shrink during the heating season as the combination of lower humidity coupled to floor heating forces the moisture content of the floor down. Consequently floors installed over underfloor heating are subject to a greater degree of movement between the seasons than floors installed in areas that are heated by radiant heating systems. The amount of movement will vary depending on the construction of the board. Typically engineered boards will expand and contract on mass and gaps between boards are less likely. With solid wood products the gaps between the boards will change size, this is a perfectly normal characteristic of solid wood floors.

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