

BAUWERK PARQUET WITH UNDERFLOOR HEATING AND SURFACE TEMPERATURE REGULATION

Parquet by Bauwerk is suitable for installation over underfloor heating, as per the standard EN 1264 (series) 'Surface-embedded heating and cooling systems with water flow'. The maximum acceptable surface temperature is 29 °C and must not be exceeded, even around the edges.

Heat accumulation due to carpets, shelves, futon beds, or similar objects must be avoided, because it can lead to more expansion at the joints and bulging in the fitted elements.

Wood hardly takes any heat away from underfoot compared to tiles, for example. This means more walking and living comfort.

For types of wood that tend to swell or shrink more (e.g. beech and maple), larger joints and cupping occur during winter. Humidifying the air and maintaining a healthy room climate (20 to 22 °C, and a humidity of 35 to 40% during the heating season) can counteract this effect. Measuring the indoor climate conditions is particularly important for operating a heated screed floor. Using an air humidifier is recommended during the heating season.

Choosing wooden flooring

Multi-layer parquet swells and shrinks much less than solid parquet, and is thus better suited for this purpose. In general, all glued-down or floating parquet floors by Bauwerk are suitable for use with underfloor heating. Flooring with a heat transfer resistance of $R \leq 0.15 \text{ m}^2 \text{ K/W}$ is considered to be appropriate without any special adjustments. Because of its low heat transfer resistance, full-area bonding is the best installation method. With floating installation, the presence of the underlay mat required for this and an often unavoidable layer of air (e.g. due to unevenness in the floor or heavy furniture) leads to higher heat transfer resistance. With sharp fluctuations in room climate, noises such as creaking or cracking, may occur.

Special considerations for installing parquet on top of underfloor heating

- › General installation rules for Bauwerk parquet apply.
- › A meeting must be held in due time to coordinate the overall planning and construction, involving the architect, designer, electrical and building engineers, screed and floor installers, as well as the building contractor or its representative.
- › To coordinate the planning and construction of heated/cooled surfaces in a new building, the latest specialist information, data sheets and documents are available for download at www.flaechenheizung.de.
- › During the continuous operation of underfloor heating, the temperature on the surface of the floor must at no point exceed 29 °C. High temperatures and/or an excessively dry room climate have a negative effect on wooden flooring, and can lead to expanded joints, deformations, or even cracks.
- › In the case of controlled house ventilation with no moisture recovery, the air exchange rates for the heating period must be adjusted to avoid an overly dry indoor climate.

Guide for installing parquet on new heated screed (does not apply to dry structures)

Functional testing for the new underfloor heating: the functional heating test is performed and recorded by the installing company. The functional heating procedure only involves recording that the heating is operating without malfunctions. Under no circumstances will this dry the screed to the extent that it has the required humidity content for installing parquet.

The installation readiness heating test must take place immediately after the functional heating procedure. In doing so, instructions from the heating system's manufacturer, as well as the applicable country-specific SIA, DIN, and ÖNORM standards must be complied with. In the case of screeds with chemical additives, such as accelerants, the corresponding manufacturer's instructions must be followed.

The heating planner must indicate the locations of the CM measurement points in the plan. These depend on the thickness of the screed, the least favourable ventilation conditions in the room, and the lowest surface output of the heating. The location of the measurement points must be inspected by the insulating layer installer, marked by the HVAC system technician, and accepted by the screed installer. At least one measurement point must be marked per room. There must be no heating pipes within a distance of 10 cm (diameter of 20 cm) from the measurement point. Before performing the control measurement of the screed humidity using a CM measuring device or the KRL method, checking the

humidity using film or electronic measuring devices is recommended to avoid unnecessary CM/KRL measurements.

For heated screed, the building designer must prepare a joint plan in conjunction with the heating installer, screed installer, and floor installer. The type of screed, the arrangement of the heating circuit and the type of parquet must be considered. Any expansion joints present must generally be kept in the surface layer.

After the installation readiness heating test, the underfloor heating must be kept on the lowest setting until the installation of the parquet surface has been completed, without switching it off overnight.

Operation with surface temperature regulation (cooling)

If surface systems are also to be used for cooling, the client must inform the floor and parquet installer of this. Any possible condensation must be prevented. If the air cools while the absolute amount of moisture remains the same, relative humidity rises, potentially to a high enough level for condensation to form. As cooling surfaces reach low temperatures, this point can be achieved relatively quickly. This results in these surfaces 'sweating' due to condensation.

Because of this, the control system for surface temperature regulation must have a condensation warning device or a dew-point sensor near the floor surface. Having a condensation warning device or a dew-point sensor near the flow pipe alone is by no means sufficient. Sensors for measuring air humidity and dew-point monitors must be installed in every room. The relative humidity on the floor must not exceed 70%. The cooling flow temperature must always be at least 3° Kelvin above the indoor dew-point temperature. This is why having an advanced control system is particularly important with surface temperature regulation. The ability to make adjustments in individual rooms is recommended. Wet rooms and bathrooms must be assessed individually. A decentralised dew-point monitoring system is used in larger buildings that have areas with different features and intended uses. Centralised dew-point monitoring systems are better suited for single-family houses. In any case, there must be control devices that switch the cooling system off before it reaches the dew point, thus preventing any possibility of condensation forming.

Having a heating and cooling system can be useful for adjusting a room's temperature. However, in summer, such regulation does not replace conventional air conditioners, which remove even more humidity from ambient air. Cold floors create an unpleasant walking experience, which is why we see floor temperature regulation systems as a supporting measure for maintaining a comfortable indoor climate during hot summers.

Current understanding suggests that continuous cooling periods should not be longer than three to four weeks to prevent any humidity damage to the building and floor structures. For installation on top of a cooled/temperature-regulated screed structure, we recommend prefinished Bauwerk parquet with full-surface bonding installation. Floating installation is not recommended. Ideally, temperature-regulated surfaces should not be covered by carpets or similar objects. As a rule, a heat transfer resistance (the R-value) of less than 0.10 m² K/W is suggested for floor temperature regulation. The lower the R-value, the better!