

Resistance and suitability of laminate- and wood floorings against floor heatings

Problem

With the installation of the wood- and laminate floor coverings on floor heatings the following problems have to be considered:

1. Due to the swelling and shrinking of the hygroscopic flooring materials opening of joints, delamination of the top layer, cracks as well as convex and concave deformations are possible. The floors should be able to resist surface temperatures of 29 °C.

Aspect Resistance against floor heatings

2. The materials have a relatively small thermal conductivity (additional insulating and compensating materials should be taken into consideration).

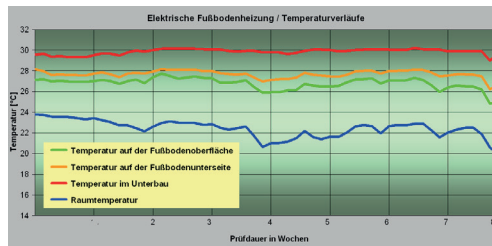
Aspect Suitability of the floor heatings

Resistance against floor heatings

- Test arrangement
 - Glued flooring on concrete with warm water heating system
 - In a climate chamber with alternating climate (worst case)
 - Thermal couples on the concrete and on the floor covering foreside and upperside
- Test parameter at the installed covering
 - Opening of joints (length and cross joints)
 - Height differences at joints (length and cross joints)
 - Flatness of the panel
- Possible damages of parquet floors
 - Delamination of the surface layer
 - Cracks of top layer



Test area in a climate chamber



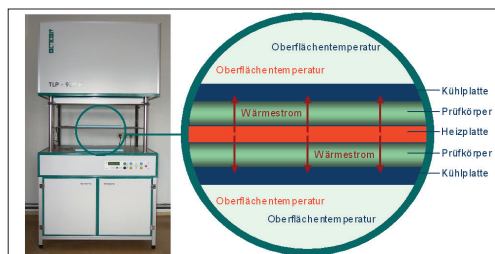
Heating-/Temperature control (example)

Suitability of the floor heatings

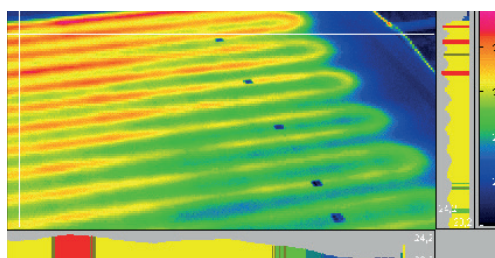
- Compliance test of requirements
 - Determination of thermal resistance of floorings by means of guarded hot plate (DIN EN 12664, DIN EN 12667)

Requirement: thermal resistance of flooring and underlay material: 0,15 (m²*K/W)

- Test of performance parameters
 - Determination of surface temperatures (temperature fields) of floorings by means of an infrared camera
- Optimization of system structures
 - Numerical method - Calculation of thermal resistance of the composition or components according to DIN EN ISO 10077-2 and DIN EN ISO 10211-1
 - Calculation of thermal insulation properties of the system (e.g. floor, underfloor heating and flooring) or the individual components (e.g. multilayer flooring)
 - Optimization of thermal insulation properties of systems or configurations of components with arbitrary number of optimization steps
 - Advantages of the method: fast, variabel, cheap, large scope of evaluation



Determination of thermal resistance of a flooring



Infrared photography of a flooring configuration (heating and flooring)

Entwicklungs- und Prueflabor
Holztechnologie GmbH

Zellescher Weg 24
01217 Dresden · Germany

+49 351 4662 0
+49 351 4662 211
info@eph-dresden.de
www.eph-dresden.com

Contact persons



Resistance

Dr.-Ing.

Rico Emmler

+49 351 4662 268

rico.emmler@eph-dresden.de



Suitability

Dipl.-Ing.

Jens Gecks

+49 351 4662 209

jens.gecks@eph-dresden.de

