Subfloor Heating and Cooling

Installation Guidelines

Purpose

This document outlines the requirements for installing Hakwood engineered flooring over subfloor heating and cooling systems. Pay special attention to the pre-installation heating protocol as this procedure may take up to several weeks.

These guidelines must be used in conjunction with the <u>Hakwood Installation Instructions for Flooring</u> document. All general requirements regarding:

- Climate control
- Surface preparation
- Storage and handling
- Environmental conditions
- Installation methods

as specified in the main document must be met in addition to the specific requirements detailed below.

Compatible Products

- Duoplank® 20 mm (3/4")
- Duoplank® 15 mm (5/8")
- Duoplank® Lite 14 mm (9/16")

WOOD SPECIES COMPATIBILITY

- Our engineered flooring with a European Oak or European Ash top layer
- For custom flooring using other wood species, compatibility must be confirmed with Hakwood technical department

System Requirements

ALL HEATING SYSTEMS MUST:

- Be specifically rated for use with wood flooring
- Include floor temperature sensors
- Have separate thermostats for individual room control
- Maintain required climate conditions
- Provide sufficient tensile strength for glue-down installation of the wood flooring

TEMPERATURE AND HUMIDITY LIMITS

- Room temperature: 18-24°C (65-75°F)
- Relative humidity in the room: 40-65%
- Water supply temperature must be regulated to ensure floor surface temperature never exceeds 28 °C (82 °F)



Installation Protocol

PRE-INSTALLATION HEATING PROTOCOL

Only applicable for traditional hydronic systems, both in new screed and in renovation with milled grooves in existing screed

NEW SCREED

- Cement-based screed should be at least 28 days before starting heating protocol
- For anhydrite (or other gypsum-based screed), consult manufacturer's specifications for minimum age
- Room thermostat must be set high enough for system activation

EXISTING SCREED (OFTEN RENOVATION)

- All milled grooves must be filled prior to pre-installation heating protocol with suitable filling compounds specifically rated for heating systems
- Standard leveling compounds or tile adhesives are not acceptable for filling heating system grooves

1. RUN THE PROTOCOL:

- At the supply water distributor, start with supply water temperature 5° C (9° F) above room temperature
- Increase by 5°C (9°F) every 24 hours
- Continue until reaching maximum 45°C (113°F)
- Maintain maximum temperature for 24 hours
- Decrease by 5°C (9°F) every 24 hours until starting temperature
- Repeat cycle at least once

2. VERIFY SUBFLOOR MOISTURE CONTENT:

- Cement-based screed: maximum 1.8% CM (higher moisture content possible with suitable PU or epoxy moisture barrier IF approved by its manufacturer)
- Anhydrite screed: maximum 0.3% CM (moisture barriers not applicable for gypsum-based screeds)

DURING INSTALLATION

- Maintain subfloor temperature following adhesive manufacturer's temperature requirements
- Use only adhesives rated for heated floors
- Allow proper adhesive curing time

POST-INSTALLATION HEATING PROTOCOL

- Follow adhesive manufacturer's advice before raising supply water temperatures
- Increase supply water temperature gradually by 2°C (3.6°F) per day until floor heating installer's advised supply temperature is reached
- Never exceed 28°C (82.4°F) at floor surface.
- Maintain relative humidity of the room between 40-65%



Important Warnings

- Avoid placing thick rugs or furniture without ventilation on heated floors
- Prevent rapid temperature changes
- For cooling systems: include proper condensation prevention
- Monitor each room's temperature individually
- Follow proper heating protocol at start of each heating season
- Use only adhesives specifically rated for heated floors

Technical Values

THERMAL RESISTANCE (R-VALUE):

- Duoplank 20mm (3/4"): 0.118 m²K/W (0.67 ft².°F·h/BTU)
- Duoplank 15mm (5/8"): 0.088 m²K/W (0.50 ft².°F·h/BTU)
- Duoplank Lite 14mm (9/16"): 0.082 m²K/W (0.47 ft².°F·h/BTU)

Warranty

THE WARRANTY REMAINS VALID ONLY WHEN:

- All instructions in this document are followed
- Required temperature and humidity levels are maintained
- Heating protocol is followed before installation and after periods of inactivity
- Heat sensors are installed and monitored according to specifications

Technical Specifications Appendix

A. Heating System Types

1. TRADITIONAL HYDRONIC SYSTEMS

- Heat source: Boiler or heat pump
- Minimum 25 mm (1") screed coverage above heating pipes
- Maximum floor surface temperature: 28°C (82°F)
- In case of milled grooves, minimum coverage might be less than 25mm. In that case it is important to use lower supply temperatures to prevent from too high floor surface temperatures
- Must include distributor with proper mixing valves and controls
- Requires monitoring of supply and return temperatures

WHEN COOLING IS INCLUDED:

- Automatic dew point monitoring and control required
- Cooling supply temperature must be controlled based on room conditions
- Higher humidity levels accelerate dew point occurrence



2. DRY CONSTRUCTION SYSTEMS

- Heat source: Boiler or heat pump
- Suitable for renovation projects due to minimal build-up height
- Must include proper heat distribution plates
- Maximum floor surface temperature: 28°C (82°F)
- Must provide sufficient tensile strength for glue-down installation

WHEN COOLING IS INCLUDED:

- Automatic dew point monitoring and control required
- Cooling supply temperature based on room climate conditions

3. ELECTRIC HEATING SYSTEMS

- Can be installed in screed or thin leveling compound
- Self-limiting systems strongly recommended
- Must include floor temperature sensors and controls
- Maximum floor surface temperature: 28°C (82°F)
- Must prevent rapid temperature fluctuations

B. Installation Protocol Details

HEATING PROTOCOL NOTES

- Cracks typically appear during cooling rather than heating phase, making the cooling phase of the pre-installation heating protocol equally critical for proper subfloor conditioning
- Full protocol must be completed before initial installation
- After periods of inactivity, only post-installation heating protocol required
- At start of each heating season, verify system function and increase temperature gradually

ADHESIVE REQUIREMENTS

- Use only adhesives specifically rated for heated floors. Follow adhesive manufacturer's guidelines for application and curing time
- Consult manufacturer for specific product recommendations

