



Pre-Installation Guide



Bel-Air Wood Flooring Pre-Installation Guide

This guide will take you through the necessary steps to prepare for the installation of your Bel-Air Flooring. Make sure to carefully read through this guide so that you may know the best way to prepare for the installation of your Bel-Air Flooring. Additional reading includes; Bel-Air Wood Flooring Installation Guide, Bel-Air Wood Flooring Maintenance & Care Instructions and Bel-Air Wood Flooring Warranty. Failure to follow the instructions given in these guides, as well as improper installation, will void the warranty given by Bel-Air Wood Flooring. If you have any questions regarding this guide, or have any questions not covered in these guides; please contact Bel-Air Wood Floor at: (888) 800-9206 Monday – Friday, 8am – 5pm PST.

CAUTION: WOOD/SAW DUST

The International Agency for Research On Cancer has classified wood dust as a nasal carcinogen. The sawing, sanding, and/or machining of wood products can produce wood dust that can cause respiratory, eye, and skin irritations. Wood machining power tools should be equipped with a dust collector to reduce airborne wood dust. Wear an appropriate NIOSH designated dust mask to reduce exposure to airborne wood dust. Avoid contact with eyes and skin by using proper safety glasses and protective clothing. In case of irritation, flush eyes or skin with water for at least 15 minutes. For further technical for installation questions or to request a Product Specification Data Sheet contact the manufacturer at 888-800-9206 Monday – Friday, 8am – 5pm PST.

Attention California Installers and Consumers:

WARNING! Installation of this product and any wood product may create wood dust, which is known to the State of California to cause cancer. Avoid inhaling wood dust or use appropriate protection such as NIOSH mask for personal protection

Wood is a natural material and as such can vary by color and shade. Therefore, It is up to the homeowner and/or installer to ensure the correct type, model, collection, and color were delivered to the jobsite prior to installation. The homeowner/installer can do so by comparing it with the “sample” that the floor was selected from, ensuring the floor received is the desired floor and is acceptable for installation. It is the homeowners/installers responsibility to inspect the product for any visible defects or damages prior to installation. If the floor does not meet the homeowners/installers expectations and/or is not acceptable for installation; please contact Bel-Air Wood Floor before beginning installation! The Bel-Air Wood Flooring Warranty does not cover any claims related to incorrect type, model, collection, color, visible defects or damages once the floor was installed. No replacement or refunds will be offered or issued once floor is installed!



Professional Installation

It is suggested that Bel-Air Hardwood floor be installed by an experienced wood flooring professional. A professional installer should be able to provide evidence of past work either via references or show completed work. They will also know what inspections to make that are required before, during, and after installing hardwood flooring. If not installed by a flooring professional; installer assumes any risk of issues arising due to improper installation, and/ or any issues arising from improper Pre/ Post installation inspections.

Calculating & Ordering

Flooring planks must be cut in order to fit around obstacles such as but not limited to: Stair-cases, wall contours, pipes, and other household items. Therefore, when calculating square-footage and ordering flooring materials please consider ordering an additional 10%-15% for cutting & waste.

Shipping, Handling & Storage

Please refrain from shipping, loading or unloading hardwood flooring in rain, snow or other humid conditions. Make sure to store hardwood flooring in an enclosed building that is well ventilated. When storing the hardwood floor boxes make sure to leave adequate room around the stacked boxes to allow air circulation. Do not store hardwood-flooring cartons near heating or cooling ducts or direct sunlight.

Do not deliver wood flooring to the jobsite or install wood flooring until appropriate temperature and humidity conditions have been achieved. Appropriate temperature and humidity conditions are defined as those conditions to be experienced in the building after occupancy.

Job Site & Installation Surface

It is the sole responsibility of the homeowner and /or installer to determine if the job site conditions, environment, and installation surface (Sub-Floor) are up to local building codes and are acceptable for hardwood flooring installation as well as, meet or exceed the NWFA (National Wood Flooring Association) industry standards and regulations. Please make sure to evaluate the jobsite for potential problems before wood flooring is delivered and installation begins.

PLEASE NOTE: Bel-Air Wood Floors warranty does not cover any failures resulting from, or related to, job-site environment, condition or subflooring deficiencies.



Job Site Environment

Installation of wood flooring should be one of the last jobs completed in a building construction project. Prior to installing hardwood floors, the homeowner and/or installer must ensure that the building is structurally complete, meets or exceeds applicable local building codes and is ready to accept hardwood flooring. This is including, but is not limited to, being enclosed with windows and doors, in addition to all concrete, cement, masonry, plastering, drywall, texturing, painting primer coats and other moisture involved/related work has been completed.

Job Site Temperature

Do not deliver wood flooring to the jobsite or install wood flooring until appropriate/consistent temperature and humidity conditions have been achieved. Appropriate temperature and humidity conditions are those that replicate conditions to be experienced in the building once occupied. If a heating and/or air-conditioning system is in operating condition; it should be operating before, during and after installation as this will ensure the floor acclimates under the same conditions after the building becomes occupied. If it is not feasible for the heating and/or air-conditioning system to be operating before, during and after installation, a temporary heating and/or dehumidification system that mimics the normal temperature and humidity conditions to be experienced indoors can enable the installation to proceed until the permanent heating and/or air-conditioning system is operating.

Job Site Drainage

Ensure proper drainage exists around the structure. Exterior surface drainage should direct water away from the building. Poor drainage or lack of moisture protection can allow excessive water and moisture to penetrate basement walls, flow beneath concrete slabs, basement floors, and into crawl spaces.

Crawl space should be a minimum of 18" (457mm) from ground to underside of joists. Crawl space earth (or thin concrete slab) should be covered 100 percent by a vapor retarder such as a polyethylene sheet (minimum 6 mil), or any recommended puncture-resistant membrane meeting proper ASTM D1745 standards.

Job Site Moisture & Humidity Levels

Hardwood flooring products are constructed by using various types of wood. In general wood is a hygroscopic material, meaning its size and shape changes naturally due to fact that it constantly absorbing and giving off moisture. It will continue do this until it reaches an equilibrium in the moisture content with its surroundings. The more humidity that is present in the air, the more it will absorb, or in the case of less humid environments, release. Therefore, the moisture level of the job site has a direct effect on how much wood flooring will expand/contract after installation. As wood



absorbs water, it will expand across the grain, which can cause it to swell, warp, and buckle. In order to determine the moisture levels, the Homeowner/Installer must measure the moisture content of both the sub-floor as well as the hardwood flooring. This can be done by using an appropriate measuring device such as a scanner or a pin type moisture meter. If high moisture readings are found, identify the moisture source and correct the problem before bringing in or installing any wood flooring. See Acclimation Section for more detailed information.

Acclimation

As previously stated, wood is a hygroscopic material, meaning its size and shape changes naturally due to fact that it constantly absorbing and giving off moisture until it reaches an equilibrium moisture content (EMC) with its surroundings. Since temperature is directly related to the amount of humidity in the air, hardwood-flooring professionals use the term Relative Humidity. Relative Humidity is the ratio of the amount of vapor moisture in the air shown as the total amount of moisture the air can hold at a given temperature. As hot air increases its ability to hold moisture; therefore, the percentage of Relative Humidity decreases and colder air decreases its ability to hold moisture; therefore, the percentage increases. The average EMC for wood flooring installation can vary depending on variables such as geographic location and time of year. Additionally, a wide range of relative humidity can be experienced between individual job sites in the same area, such as an oceanfront home versus a jobsite that's a few miles inland.

Recommended Conditions & Moisture Content

Bel-Air Wood Flooring products are made to perform best when wood reaches its EMC of 6%-9%, which directly coincides with a relative humidity range of 30%-50%, and within a temperature ranging from 60° to 80° Fahrenheit. These conditions are usually the normal living conditions of any normal household. Therefore, it is very important to acclimate newly delivered flooring products for as long as necessary to allow the moisture content of the flooring to fully adjust to its new surroundings before installation.

In order to properly acclimate your floor, the Installer and/or Homeowner must take the following steps:

Local Normal Living Conditions

The Homeowner and/or Installer must check for the local historical weather trends to determine the high, lows and average temperatures and humidity readings to determine the local conditions expected in the building year round. These exterior conditions usually affect the HVAC system performance inside the structure.



Interior Normal Living Conditions

The indoor conditions should reflect the room temperature and relative humidity levels expected to be present before, during, and most importantly, after installation (Usually maintained by an HVAC system to reach temperatures of 60-80 degrees Fahrenheit and Relative Humidity range of 30%-50%). If the conditions mentioned above are not met, an HVAC system and/or humidification / dehumidification system should be in operation before, and during installation. Room temperature and humidity of installation areas should be consistent with normal, year-round living conditions for at least ONE WEEK before installation of wood flooring. Room temperatures of 60- 80F and a humidity range of 30%-50% are recommended year- round.

Floor Moisture Content

The Homeowner and/or Installer must check the wood flooring moisture content with a moisture meter to establish a baseline for required acclimation. Record flooring moisture content at time of delivery and at time of installation. Make sure to retain those readings and document them.

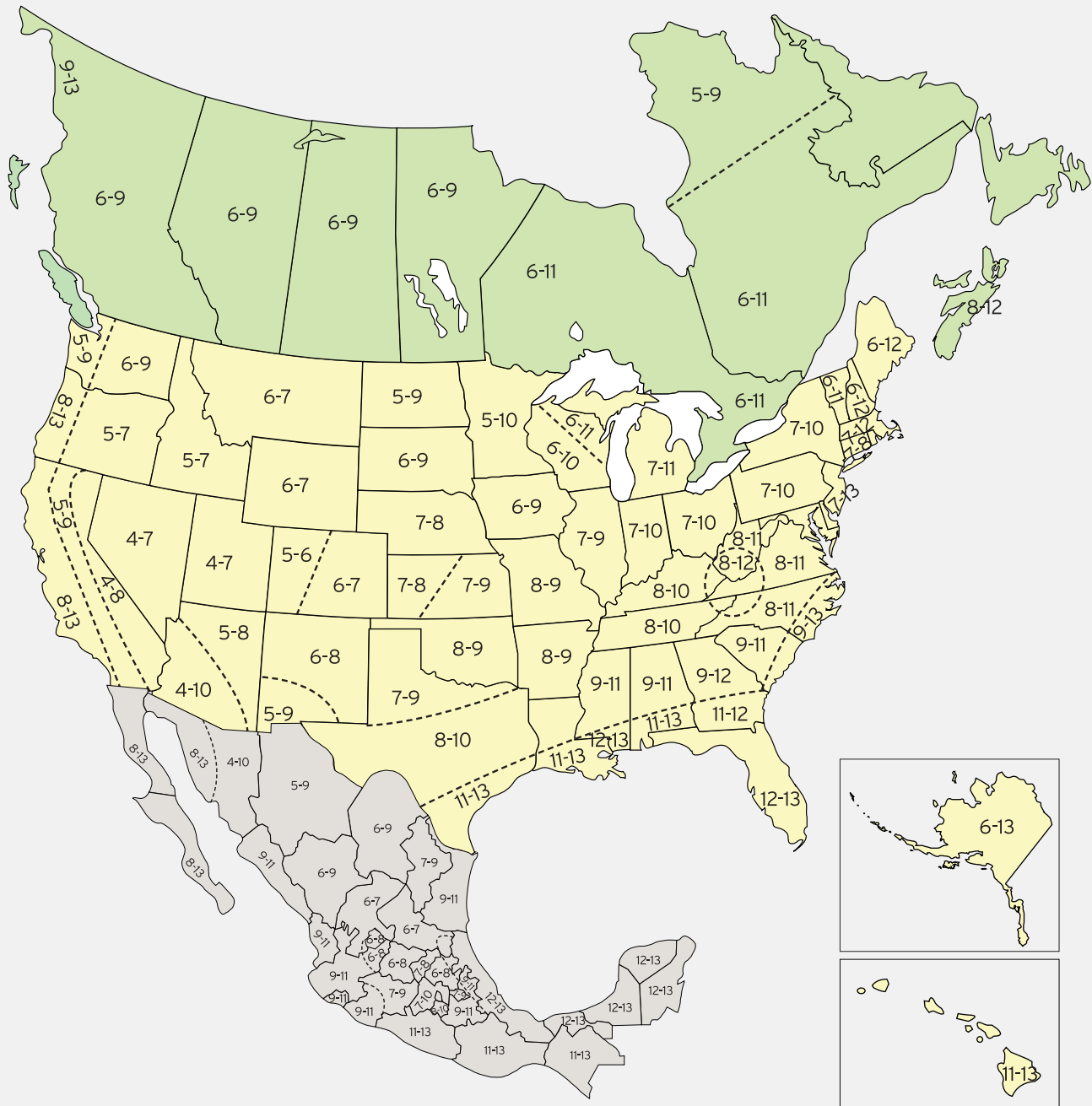
See the following page to for assistance with figure out weather conditions and humidity requirements that are applicable in your region of the United States.

°F / °C	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC
30°/1°	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
40°/4°	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
50°/10°	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
60°/15°	1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1	26.8
70°/21°	1.3	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80°/26°	1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6	26.3
90°/32°	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26
100°/37°	1.2	2.3	3.3	4.2	5	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17	19.5	22.9	25.6
% RH	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	98%

Chart adapted from Wood Handbook: Wood as an Engineered Material (Agriculture Handbook 72) Forest Products Laboratory, U.S. Department Of Agriculture



MOISTURE MAP OF NORTH AMERICA



The numbers on the accompanying map provide examples of how average moisture contents for interior use of wood products vary from one region to another, and from one season to another within a region. Actual moisture content conditions in any location may differ significantly from these numbers.



Installation Surface (Sub-Floor Preparation)

It is the homeowners and/or installers responsibility to ensure that the installation surface (Sub-Floor) and the materials used meet or exceed applicable local building codes along with the NWFA (National Wood Flooring Association) industry standards and regulations. The homeowner and/or installer must make sure that the sub-floor is properly fastened and structurally supported. As well as clean, dry and free of any debris such as nails, wax, oil or any adhesive residue.

Wood Sub-Floor

Wood sub-floor must be structurally sound and properly secured with nails and screws every six inches along joists to reduce the possibility of squeaking. Wood sub-floors must be completely flat, dry and free of wax, paint, oil and debris. Make sure to replace any damaged or detained sub-flooring and underlayment. Additional requirements for flatness are required for floating floors as stated in installation guidelines.

Appropriate Wood Sub Floors Materials:

Plywood Subfloors – CD Exposure 1 plywood is an appropriate sub-flooring material. Subfloor panels should conform to U.S. Voluntary Product Standard PS1-95, Construction and Industrial Plywood and/or US Voluntary PS 2-04.

Sub-Floor Panels – OSB Exposure 1 subfloor panels can also be used as a subflooring material and should conform to U.S. Voluntary Product Standard PS1-95, Construction and Industrial Plywood and/or US Voluntary PS 2-04. However, additional thickness requirements must be achieved prior to installation.

Solid-Board Subfloor – Solid-board subflooring should be 3/4" x 5 1/2" (1" x 6" nominal), Group 1 dense softwoods, No. 2 Common, kiln-dried to less than 15 percent moisture content. Ensure that there is proper expansion space (1/8") between the panels. If the subfloor panels are not tongue-and-grooved and if there is not sufficient expansion space, use a circular saw to create the specified space. Do not saw through joints on T&G subfloors.

Wood Sub-Floors Thickness:

1. Spacing 16" or Less – On truss/joist spacing of 16" (406mm) o/c or less, the industry standard for single-panel subflooring is nominal 5/8" (19/32", 15.1mm) CD Exposure 1 Plywood subfloor panels (CD EXPOSURE 1) or 23/32 OSB Exposure 1 subfloor panels, 4' X 8' sheets.



2. Spacing 16" or More – On truss/joist spacing of more than 16", up to 19.2" (488mm) o/c, the standard is nominal 3/4" (23/32", 18.3mm) T&G CD EXPOSURE 1 Plywood subfloor panels, 23 (Exposure 1), 4' X 8' sheets, glued and mechanically fastened, or nominal 3/4" (23/32", 18.3mm) OSB Exposure 1 subfloor panels, 4' x 8' sheets, glued and mechanically fastened.

3. Spacing 19" – 24" – Truss/joist systems spaced over more than 19.2" (488mm) o/c up to a maximum of 24" (610mm) require nominal 7/8" T&G CD EXPOSURE 1 Plywood subfloor panels, (Exposure 1), 4' X 8' sheets, glued and mechanically fastened, or nominal 1" OSB Exposure 1 subfloor panels, 4' x 8' sheets, glued and mechanically fastened — or two layers of subflooring. Or brace between truss/joists in accordance with the truss/joist manufacturer's recommendations and with local building codes. Some truss/joist systems cannot be cross-braced and still maintain stability.

4. Double Layer – For double-layer subfloors, the first layer should consist of nominal 3/4" (23/32", 18.3mm) CD Exposure 1 Plywood subfloor panels (CDX), 4' X 8' sheets or nominal 3/4" (23/32", 18.3mm) OSB Exposure 1 subfloor panels, 4' x 8' sheets. The second layer should consist of nominal 1/2" (15/32", 11.9mm) CD EXPOSURE 1 plywood subfloor panels, (Exposure 1) 4' X 8' sheets. The 1/2" plywood should be offset by a 1/2 panel in each direction to the existing subflooring. The panels may also be laid on a diagonal or perpendicular, with 1/8" spacing between sheets. Nail on a 12" minimum grid pattern, using a ring-shanked nails or staples.

5. Solid Board Sub Floor – Solid-board subflooring should consist of boards no wider than 6 inches, installed on a 45 degree angle, with all board ends full bearing on the joists and fastened with minimum 8d rosin-coated or ring-shanked nails, or equivalent

• **Do not install flooring directly over floor joist without proper subflooring!** •

Wood Sub-Floor Leveling & Flatness – Prior to installing any hardwood-flooring product the installer must ensure that all subfloors are properly leveled and flat to a tolerance of 1/4" in a 10' radius when using fasteners longer than 1-1/2" long and 3/16 in 6' radius when using fasteners shorter than 1-1/2". If the sub-floor is not properly leveled or flat the installer must take the appropriate actions and use professional leveling products to correct any flatness deficiencies. If peaks or valleys in the subfloor exceed the tolerances specified above, sand down the high spots and fill the low spots with a leveling compound or other material approved for use under wood flooring. Once leveling deficiencies were corrected and a sufficient flatness was achieved the installer must ensure that the subfloor surface is smooth, clean, dry and free of contaminants that would interfere with an adhesive bond.

Wood Sub-Floor Moisture Level – Must not exceed 12% moisture content. The moisture difference



between sub-floor and hardwood flooring should not exceed 4%. If sub-floors exceed this amount, an effort should be made to locate and eliminate the source of moisture before further installation.

Concrete Sub-Floor

Concrete Sub-Floors Specifications

Concrete slabs must be of high compressive strength with minimum 3,000 psi. In addition; concrete sub-floors must be dry, smooth and free of wax, paint, oil, grease, dirt, non-compatible sealers, drywall compounds, etc.

Lightweight concrete that has a dry density of 100 pounds or less per cubic foot is not suitable for wood floors. One way to determine if the concrete sub-floor is lightweight concrete: draw a nail across the top. If it leaves an indentation, it is a good indication that it is a lightweight concrete. With that said; lightweight concrete can still be used, if properly treated. Check with the adhesive manufacturer for the proper material to use in order to correct this issue.

Concrete Subfloors Flatness Level

In order to ensure permanent and secure bond, and to achieve a flush smooth look, the concrete sub-floor must meet or exceed adhesive manufacturers guidelines for flatness. Therefore the homeowner and/or installer must make sure the concrete slab is flat and leveled to a flatness tolerance of 1/8" in a 10' radius. If the concrete subfloor does not meet the specification stated above, consider grinding, floating, or both, in order to correct the problem. Many high spots can be removed by grinding them down, and depressions can be filled with approved patching compounds. Slabs can also be flattened using a self-leveling concrete product.

Concrete Subfloors Moisture level - Concrete sub-floors must always be checked for moisture content prior to the installation of any wood flooring. Concrete covered with ceramic tile, marble, stone, vinyl tile, or linoleum must also be tested to insure the moisture level is acceptable for hardwood flooring installation. Please note that concrete floors must be at least 30 days old in order to be tested properly and accurately. To test concrete, use a properly calibrated and reliable moisture meter designed specifically for concrete. The maximum allowed moisture content percentage for concrete is 4%. If the moisture meter readings are above 4%, have a qualified floor-covering contractor perform a calcium chloride moisture emissions test. The maximum allowed reading for a Calcium Chloride Test is 3 lbs./1000 sq. ft./24 hours. In case the Calcium Chloride Test readings are greater than 3 lbs. and up to 7 lbs. use an appropriate vapor retarder. In glue-down applications make sure to review the adhesive manufacturer recommendations prior to installing any wood flooring planks. Please note a Calcium Chloride Test reading higher than 3 lbs./1000 sq. ft./24 hours and up



to 7 lbs is not suitable for hardwood flooring installation without vapor retarder!

Please Note: When sanding or grinding concrete, care must be taken to minimize the amount of silica dust produced. OSHA recommends using dust-collection devices, or applying water to the concrete before sanding. Approved respirators may also be used to minimize the amount of silica dust inhaled.

Sub-floors (Other Than Wood Or Concrete)

Ceramic, terrazzo, resilient tile, sheet vinyl, and other hard surfaces are suitable as sub-floor types for hardwood flooring installation. The above tile and vinyl products should be level and permanently bonded to the sub floor by appropriate methods. Clean and abrade the surfaces to remove any sealers or surface treatments. Doing this will ensure a good adhesive bond. Do not install over more than one layer that exceeds 1/8" in thickness over suitable sub-floor. Substrate must meet or exceed adhesive manufacturers guidelines for flatness. Additional requirements for flatness are required for floating floors as stated in installation guidelines.

General Radiant Heat Installation

To minimize the effect that rapid changes in temperature will have on the moisture content of the wood floor, NWFA (National Wood Flooring Association) recommends that an outside thermostat be installed. Sub-floors should have proper moisture tests according to the moisture testing procedures. With water-heated radiant-heat systems, a pressure test must be performed and documented by a qualified plumber, or the system installer, prior to beginning the installation of any wood flooring. If flooring materials that conduct heat at different rates are on the same circuit or heating zone, check with the HVAC mechanical engineer before proceeding. Ensure that floor temperature does not exceed 82 degrees. Radiant heat is dry heat; a humidification system may be necessary to maintain wood flooring stays in its comfort zone. It is the responsibility of the installer to determine the correct installation method over Radiant Heat. Please refer to the NWFA (National Wood Flooring Association) Installation Guidelines.



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