

**Installation and Maintenance InstructionsFor Strand Woven Bamboo Floors**

**Pre-Installation Checklist**

Before you begin installation, remember to review the checklist below. Full installation instructions and maintenance guidelines can also be found online at [**www.bambooflooringhawaii.com**](http://www.bambooflooringhawaii.com)**.**

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| ***Prepare the Subfloor:Make sure the sub floor is level, clean and free of debris. New concrete must be cured for at least 60 days. Test the sub floor moisture prior to installation and apply an appropriate moisture barrier on concrete sub floors. See recommended list.******Acclimate Flooring:Cross-stack flooring on a pallet, mixing boards from each box. Acclimate your floor as close to the installation area as possible, for at least 14 days in normal living conditions. More time is necessary in extreme climates. 21 + days is recommended for Tropical humid and moist climates.******Control Environment:As a general rule, the ideal indoor humidity range for hardwood is 40-65% relative humidity. In some climatesor households, the average humidity range may be higher or lower. That’s okay!In this case, simply extendthe acclimation period, and maintain humidity levels at normal living conditions set during acclimation.******Expansion Gaps:Leave at least 3/4” expansion spaces between flooring and ALL vertical objects (walls, cabinets, pipes, etc.) Large flooring runs may require additional expansion space. For floating floors, usetransition moldings between rooms and in doorways.Undercut door jambs and casings to provide adequate expansion space. Do not screw or nail cabinetry or other permanent fixtures to a floating floor.******Prepare Job Site, Acclimation, Control Subfloor Moisture, Environmental Conditions******Proper installation and maintenance are key elements in achieving best flooring results. It is the responsibility of the installer/owner to follow all guidelines provided by Bamboo Flooring Hawaii for successful installation. Please read through this documentcompletely.******C:\Users\Belle\Desktop\bamboo.png******Important Pre-Installation Notes******Note: Flooring not used for its intended purpose will not be covered under warranty.******The following information provided by Bamboo Flooring Hawaii is intended to serve as a reference guide only. Please carefully read Bamboo Flooring Hawaii’s installation, maintenance and warranty documentation prior to installation. Follow the National Wood Flooring Association (NWFA) Installation Guidelines when installing your floor.******Bamboo Flooring Hawaii offers in house technical support as a courtesy to our customers. Consult with one of our bamboo flooring experts to find answers to your specific installation questions unique to your application. Contact us by email: bambooflooringhi@aol.com; or by phone: (808) 550-8080**** ***Determine the best installation method that suits your application. Bamboo Flooring Hawaii’s floors may be Floated (not secured to the subfloor), Glued, or Nailed. Follow the instructions designated for the most suitable installation method for your project.***
* ***Upon ordering of wood floor material consider adding an additional 5%- 10% to allow for cutting waste (5%) and grading allowance (3%).***
* ***Bamboo Flooring Hawaii’s flooring is manufactured in accordance with accepted industry standards, which permit manufacturing, grading and natural deficiencies not to exceed 5%. If more than 5% of the material is unusable, do not install the flooring. Immediately contact Bamboo Flooring Hawaii or the distributor from which the flooring was purchased. No claim will be accepted for materials with visible defects once they are installed. Installation of any material serves as acceptance of the material delivered.***
* ***Installer/Owner assumes all responsibility to inspect all flooring before installation. Boards deemed unacceptable in appearance can be placed in closets, near walls or simply not be used. Pieces with glaring defects that can be seen from a standing position constitutes acceptance. The use of putty should be cut off or not be used as use constitutes acceptance. The use of putty, filler sticks or markers to touch-***

***up flooring during installation is******considerednormal practice.**** ***As bamboo is a natural product, natural variations in color may occur within and between individual flooring planks. To visualize the range of colors within the flooring style you are considering, compare your samples to the photos on our website. During installation, work from several cartons at a time to achieve a uniform appearance across the entire floor. Mix and mingle planks when dry laying the floor for maximum aesthetic appearance. Blend moldings to planks that have similar color. Natural Variations in color are not covered under warranty.***

***C:\Users\Belle\Desktop\bamboo.png**** ***It is the responsibility of the installer/homeowner to determine if the jobsite conditions, environmental conditions and sub-floor are acceptable for the installation ofBamboo Flooring Hawaii’s flooring. Prior to installation, the installer/owner must determine that the jobsite meets or exceeds all applicable National Wood Flooring Association’s Installation Guidelines. Bamboo Flooring Hawaii does NOT warrant against failure resulting from or connected with subfloor, job site damage, or environmental deficiencies after installation.***
* ***Bamboo Flooring Hawaii makes no warranty or guarantee of the quality of the chosen installer’s work or of a particular installation performed by him or her. Bamboo Flooring Hawaii disclaims all liability for any errors or improprieties in the installation of its products by an installer. Please contact the National Wood Flooring Association (800-422-4556) to find a certified installer in your area, or for more information on installation.***
* ***Controlling flooring moisture content is important for success. Bamboo, like all hardwood flooring species, is hygroscopic; its size and shape changes naturally with the absorption or release of moisture. The amount of movement varies depending on the preventative steps taken at the time of installation (i.e. acclimation, moisture barrier application, etc.) and the stability home environment thereafter. Care should be taken to control fluctuating levels of moisture indoors.***
* ***Floor noise is normal and will vary from one installation type to the next. Occasional noise is due to structural movement and may relate to sub-floor type, flatness, deflection, and/or related to the fasteners, changes in environmental conditions, relative humidity and the amount of topside pressure applied to the flooring. For these reasons floor noise is not considered a product or manufacturer defect.***
* ***Bamboo Flooring Hawaii’s flooring is intended for installation on or above grade only. Flooring installed below grade is not covered under warranty.***

***Prior to Installation of Bamboo Flooring Hawaii’s Floors******Job Site Preparations******Prior to installation, it is the installer’s responsibility to determine that the jobsite, environment and subfloor conditions all meet the requirements of the National Wood Flooring Association. Do not deliver flooring to jobsite until the building has been enclosed with windows and doors, all cement, plastering, and other “wet” work has been completed, and a consistent room temperature has been reached. Confirm proper drainage exists around the structure. Lack of moisture protection can allow excessive water or moisture to penetrate basement walls, flow beneath concrete slabs, basement floors, and into crawl spaces. In crawl spaces, exposed earth must be fully covered with minimum 6-mil polyethylene sheeting. Crawl space vents must be open. A moisture retardant such as 6 mil polyethylene film must be placed in crawl spaces. Heating units or non-insulated ductwork close to the flooring or subfloor may cause “hot spots” which must be eliminated prior to installation.******C:\Users\Belle\Desktop\bamboo.png******During installation, it is the installer’s responsibility to document all jobsite conditions and measurements including the installation date, flooring moisture content, site relative humidity, temperature, and subfloor moisture content. This information must be retained by the installer and left with the property owner as a permanent record. Please see attached list. For a complete list of points to address prior to installation, refer to the NWFA’s Jobsite Checklist.******Subfloor Requirements******General: Subfloor must be structurally sound and meet all NWFA guidelines. All subfloors must be flat to a tolerance of 3/16”in a 10’ radius. Use appropriate leveling products for correcting subfloor deficiencies. Subfloor surfaces must be smooth, clean, dry and free of contaminants that would interfere with an adhesive bond. All subfloors should be tested for moisture content (see “Subfloor Moisture Testing”). If high moisture readings are found, identify the moisture source and correct the problem before installation. Do not install flooring directly over floor joist without proper subflooring.******Appropriate Wood Subfloors Materials:**** ***CD Exposure 1 plywood (grade stamped US PS1-95)***
* ***OSB Exposure 1subfloor panels (grade stamped US PS1-95)***
* ***Solid-board subflooring should be ¾” x 5½” (1” x 6” nominal), Group 1 dense softwoods, No. 2 Common, kiln dried***

***Acceptable Subfloor Thickness Requirements:***

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| --- | --- |
| ***Joist System Spacing (inches on center)*** | ***Minimum Thickness*** |
| ***12”*** | ***5/8”*** |
| ***12” to 16”*** | ***3/4”*** |
| ***16” to 19.2”*** | ***7/8”*** |
| ***19.3” to 24”*** | ***1-1/8”*** |

***Concrete Subfloors: Subfloor must meet all above requirements. Concrete must be fully cured and at least 60 days old.Concrete must be free of dirt, oil, paint, old adhesive, wax, sealers and curing agents. Concrete that is not properly leveled can cause improper adhesive transfer, hollow spots, and squeaks. Sand or grind down high spots. Level low spots with appropriate leveling material; allow extra drying time for the leveling compounds. Test subfloor moisture content. To minimize moisture transfer from the slab, see recommended list and follow manufactures instructions.******Moisture Testing Subfloor******General: Test the subfloor for moisture content before installation. If high moisture readings are found, identify the moisturesource and correct the problem. Extend acclimation time and increase ventilation until the proper conditions have been met. Apply a moisture barrier. Please note that test results are only applicable the day of testing and will not ensure that moisture will not fluctuate with seasonal changes.******C:\Users\Belle\Desktop\bamboo.png******Wood Subfloors: Wood Subfloors: Use moisture meter to test wood subfloor moisture content. If results show moisture vaporat or exceeding 12%, determine its source and correct problem. Do not install the floor without a vapor barrier. Bamboo Flooring Hawaii always recommends using a moisture/vapor barrier, especially if the moisture content of the flooring and subfloor vary greater than 4%.******Concrete Subfloors: Concrete subfloors must be tested for moisture vapor pressure in more than one place for consistentreadings. If test results show moisture vapor exceeds the minimum requirements below, do not install the floor without an impermeable vapor retarder with a perm rating of less than .13 designed to permanently block this moisture.**** ***Calcium Chloride Test (ASTM F 1869): Maximum vapor emissions cannot exceed 8lbs/1000SF in 24 hours (recommended by Bamboo Flooring)***
* ***Tramex Concrete Moisture Encounter: Moisture readings should not exceed 4% on upper scale***
* ***In-Situ Probe Method (ASTM F 2170): Relative Humidity levels should not exceed 75% (recommended by Bamboo Flooring Hawaii)***

***Moisture Testing Bamboo Floors******Use a reliable moisture meter that is acceptable for strand bamboo flooring. Examples of acceptable moisture meters include Delmhorst or a Lignomat SDM. Contact the meter manufacture to verify settings for strand bamboo. Please note that some meters require the use of a substitute setting for bamboo, and thus must have the moisture content readings converted in order to get an accurate measurement (such as Delmhorst; see table; right\*).******Moisture Barrier Requirements******General: Unexpected changes to subfloor moisture content may causedimensional changes to the floor. To ensure a lifetime of satisfaction, it is strongly recommended that Bamboo Flooring Hawaii’s flooring be installed over a moisture barrier or vapor retarder (following manufactures guidelines) per the following specifications:******Wood Subfloors: For best results, use a moisture barrier with a perm ratingbetween 0.7 and 50 when tested in accordance with ASTM E-96 Method******A. Install as recommended by the manufacturer. See recommended list of products.******Concrete Subfloors: For concrete applications, a moisture barrier/vaporretarder should be chosen based on concrete moisture content. For unlimited moisture protection, for full spread glued floors, see recommended list and follow the instructions recommended by the manufacturer.******Acclimation & Conditioning of Bamboo Flooring Hawaii’s Floors******The goal of acclimation is to allow the moisture content (MC) of the flooring to fully adjust to its new surroundings before installation.**** ***Determine Normal Living Conditions - Ideal interior environmentalconditions vary from region to region and jobsite to jobsite. It is the installer’s responsibility to know what the “ideal” climate conditions are and customize the acclimation of the floor around those conditions. For a general view of moisture content averages by region, see the map below.***

**C:\Users\Belle\Desktop\bamboo.png*** ***Control Home Conditions Accordingly - Acclimation should occurat normal living conditions. Before opening the cartons, the indoor environment should reflect the room temperature and relative humidity levels expected to be present before, during, and most importantly, after installation. Operate temperature / humidity control systems as normal. Allow normal ventilation through rooms.***
* ***Cross-Stacking Flooring Planks - For maximum stability, Bamboo Flooring recommends cross stacking the flooring at theinstallation site while it acclimates. Remove the flooring from boxes and cross stack planks at least 4” off the subfloor with even spacing between planks to allow for complete and even air circulation around the flooring. This will accelerate the acclamation time.***
* ***Acceptable Areas for Acclimation - Acclimate the flooring as close to the center of the installation area as possible. Donot store flooring next to outside walls, in direct sunlight, near air vents or under conditions that don’t reflect the normal home environment. Garages, and exterior patios, for example, are not acceptable areas to store wood flooring during acclimation.***
* ***Determine Appropriate Acclimation Time Frame – Bamboo Flooring Hawaii’s flooring should be allowed to acclimate on thejob site for a minimum of 14 days. For regions or conditions that are extremely dry or humid 4 or more weeks may be necessary for acclimation.***

***Note: Not properly acclimating wood flooring may cause excessive expansion, shrinkage, dimensional distortion orstructural damage. The worst case scenario is one in which wood flooring is stored outside of the area in which the wood is to be installed. Acclimation is the responsibility of the installer/homeowner.******MOISTURE CONTENT OF WOOD******AT VARIOUS TEMPERATURES AND RELATIVE HUMIDITY READINGS***

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| ***30*** | ***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*** | ***26.0*** |
| ***40*** | ***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*** | ***26.0*** |
| ***50*** | ***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*** | ***26.0*** |
| ***60*** | ***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*** | ***1.3*** | ***2.5*** | ***3.5*** | ***4.5*** | ***5.4*** | ***6.2*** | ***6.0*** | ***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*** | ***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*** | ***12.0*** | ***14.2*** | ***15.7*** | ***17.7*** | ***20.2*** | ***23.6*** | ***26.3*** |
| ***90*** | ***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*** | ***26.0*** |
| ***100*** | ***1.2*** | ***2.3*** | ***3.3*** | ***4.2*** | ***5.0*** | ***5.8*** | ***6.5*** | ***7.2*** | ***7.9*** | ***8.7*** | ***9.5*** | ***10.3*** | ***11.2*** | ***12.3*** | ***13.6*** | ***15.1*** | ***17.0*** | ***19.5*** | ***22.9*** | ***25.6*** |
|  | ***5*** | ***10*** | ***15*** | ***20*** | ***25*** | ***30*** | ***35*** | ***40*** | ***45*** | ***50*** | ***55*** | ***60*** | ***65*** | ***70*** | ***75*** | ***80*** | ***85*** | ***90*** | ***95*** | ***98*** |

***Relative Humidity (percent)******Chart taken from Wood Handbook: Wood as an Engineering Material (Agriculture Handbook, 72). Forest Products Laboratory, U.S. Department of Agriculture*****C:\Users\Belle\Desktop\bamboo.png*****Installation of Bamboo Flooring Hawaii’s Floors******General Guidelines - All Installation Types**** ***Follow Bamboo Flooring Hawaii’s Maintenance & Care Guidelines to keep your floor looking its best after installation***
* ***Save extra flooring for future repairs.***
* ***Do not install flooring under permanent or fixed cabinetry.***
* ***Floor should be installed from several cartons at the same time to ensure good color, shade and appearance.***
* ***Most installation failures result from jobsite moisture. Do not deliver flooring to the jobsite until problems are corrected.***
* ***Bamboo Flooring Hawaii’s floors are intended for installation on or above grade only. Flooring installed below grade is not covered under warranty.***
* ***Since bamboo expands with any increase in moisture content, we require leaving at least 3/4” expansion space between flooring, and all walls and vertical objects, such as walls, cabinets, pipes, etc. If the installation flows into other rooms and continuous runs in excess of 30 feet, a greater expansion is required, approximately 1/16” for every ten (10) feet. NEVER install any floating floors against any vertical fixed object such as fireplace, columns, floor outlets, etc. Failure to follow this guideline may result in tenting or buckled floors. Undercutting the drywalls for extreme humid conditions would be recommended as well.***
* ***3M blue painter tape #2080 can be used to keep rows or sections of floor boards together until the adhesive has cured. (Incorrect or aggressive tape can harm the finish, do not leave on overnight.)***
* ***During installation, it is the installer’s responsibility to document all jobsite conditions and measurements including the installation date, flooring moisture content, site relative humidity, temperature, and subfloor moisture content. This information must be retained by the installer and left with the property owner as a permanent record.***
* ***Depending on the application, Bamboo Flooring Hawaii’s floors can be installed over an approved underlayment to provide greater thermal insulation and sound isolation qualities. Bamboo Flooring Hawaii recommends using a premium cork underlayment or a foam underlayment, which offers several benefits that include step noise reduction, increased walking comfort, and long-lasting durability. Cork will not work as a substitute for a moisture barrier.***

***Expansion Space Is Required**** ***Since bamboo expands with any increase in moisture content, we require leaving at least 3/4” expansion space between flooring and all vertical objects (walls, cabinets, pipes, etc.). If the installation area exceeds 30 feet, a greater expansion space is required; approximately 1/16” for every additional ten (10) feet. If the floating installation flows into other rooms, a T-molding must be used in doorways and openings between rooms (halls, archways, etc.) to allow separate areas to move without interference. Undercutting drywall to allow for expansion is recommended as well.***
* ***Note that proper expansion space depends not only on the size and flow of the installation, but also on expected seasonal changes in temperature and humidity that may cause the flooring to gain or lose moisture content over time. For example, if an installation takes place when humidity conditions are low, it’s likely that the wood flooring will gain moisture and expand later during humid seasons. In those cases, incorporate additional expansion space through use of spacers or transition moldings.***

**C:\Users\Belle\Desktop\bamboo.png*** ***Hardwood floors must be able to expand/contract without interference. NEVER install flooring against any vertical or fixed object such as fireplace, columns, islands, door jambs, floor outlets, etc. Failure to follow this guideline may result in tenting, separation or buckled floors. Do not install cabinets or other permanent fixtures on top of the floor. Never nail or screw anything through a FLOATED floor. If you have extremely heavy furniture items, install the floor using the glue-down method or nail-down method as opposed to floating the floor.***
* ***To cover your expansion space, Bamboo Flooring Hawaii carries matching bamboo flooring moldings that include reducers, t-moldings, quarter rounds, and thresholds. Matching stair nosing is always available.***
* ***Undercut door casings and jambs. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. When undercutting door casings the installer should confirm there is the recommended expansion space. The floor must have 1/16” clearance under the door casing to be able to float freely without vertical restriction. The installer should ensure that the plank can move freely under the door jamb.***

***Floating Interlocking Glue-less Installation Method******Recommended Floating interlocking Floor Tools******• Underlayment (see “Moisture Barrier Requirements”) • Hammer******• Tapping block (trimmed piece of flooring) • Tape measure******• Wood or plastic spacers (3/4”) • Pencil******• Flat bar or pull bar • Chalk line******• Miter saw (chop-saw) • Earplugs & safety glasses******• Undercut or jamb saw******Installation of Bamboo Flooring Hawaii’s Floors***1. ***Before you start, ensure that the job site, subfloor and environmental conditions are acceptable for installation of Bamboo Flooring Hawaii’s floors.***

***All requirements specified in Bamboo Flooring Hawaii’s Installation Guidelines must be met.***1. ***For moisture protection on concrete applications, seal concrete subfloor with recommended products prior to installation.***
2. ***Allow at least a 3/4” space for expansion around the perimeter of the room***

***and all vertical objects using spacers. Also see section:******“ExpansionSpace is Required”.***1. ***It is recommended to install the planks parallel to the longest wall.***
2. ***Click a few rows together before full installation to confirm your layout plan.***

***Begin by laying the first plank in a corner with the long grooved side toward the******long wall.******6. Connect short side of second plank together with mating side of the first plank.******7. Cut the last plank and complete the row. Use the remaining plank******tostart the second row.*****C:\Users\Belle\Desktop\bamboo.png**1. ***Make sure to offset the end joints of consecutive rows by a minimum of 6 inches for best appearance.***
2. ***Begin the second row by clicking the long edge of the planks together.***
3. ***Begin at an angle and press the plank downward to fully engage the click lock system.***
4. ***Repeat this process for the second plank with the short end of the plank covering the mating end of the previous plank. Use a hammer and tapping block to ensure proper engagement.***
5. ***Repeat this process for remaining rows keeping 6 inches between joints and maintaining a 3/4” expansion gap around fixed objects.***
6. ***The last row may require rip cutting the planks to size, be sure to cut enough to maintain proper expansion gap.***
7. ***As with the other rows, complete the last row by connecting the long edges.***

***Nail-Down Installation Method******The nail-down method is suitable for wood subfloors. Before you start, ensure that the job site, subfloor and environmental conditions are acceptable for installation of Bamboo Flooring Hawaii’s floors. All requirements specified in Bamboo Flooring Hawaii’s Installation Guidelines must be met.******Recommended Tools******The selection and use of any nailer is at the discretion and responsibility of the installer/ homeowner. Choose a nailer model that is specifically designed for tongue and groove applications. We recommend a Pneumatic 18 Gauge Flooring Nailer (such asPowernail 50p Flex or similar). It is the installer’s responsibility to determine the correct pressure for their nailer, and to ensure that the fastener is properly seated. Dimpling of the flooring face or edge is not a manufacturing defect.***

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| * ***Pneumatic 18-gauge tongue-and-groove power nailer***
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| * ***Underlayment (see “Moisture Barrier***

***requirements”)*** |  |
| * ***Tapping block (trimmed piece of flooring)***

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| * ***Use 1-1⁄2” to 2” long, 18 gauge cleats for Fossilized® flooring***
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| * ***Earplugs & safety glasses***
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| * ***Tape Measure***
 |
| * ***Pencil***
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| * ***Wood or plastic spacers (3/4”)***
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* ***Flat bar or pull bar***
* ***Miter saw (chop-saw)***
* ***Undercut or jamb saw***
* ***Chalk line***
* ***Hammer***

**C:\Users\Belle\Desktop\bamboo.png*****Nail-Down Installation Steps***1. ***Use a moisture barrier designed for wood subfloors (see “Moisture Barrier Requirements”).***
2. ***When nailing, the flooring should be always laid perpendicular to the floor joist.***
3. ***Allow at least a 3/4” space for expansion around the perimeter of the room and all vertical objects using spacers. Also see section: “Expansion Space is Required”.***

***4.Dry lay (do not nail) a few rows before installation to confirm your layout plan.******5. Test the air pressure and angle of your pneumatic nailer with a sample plank tocheck for correct air pressure before installation. If you note any surface damage (face dimpling), tongue damage (splitting), etc., adjust the air pressure/angle accordingly. Test until dimpling no longer occurs.******6. Begin installation next to an outside wall. This is the best reference for establishing a straight working line.******7. Hold starter row in place by blind nailing or gluing to avoid unsightly nail marks.******8. Connect short side of second plank together with the mating side ofthe first plank.*** ***9. Cut last plank and complete row. Use theremaining plank to start the second row.***1. ***Be sure to offset the end joints of consecutive rows by a minimum of six (6) inches for best appearance.***
2. ***Continue second row by connecting short plank edges first with the long edges.***

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| ***12. After the first two rows are secured, start the next row by nailing directly above the tongue at a 45 degree angle.*** |  |  |
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| ***13. Carefully monitor nailer pressure to ensure that the nail head enters the tongue only as deeply as required to allow the adjacent plank to fit properly. Ensure that the nail head rests cleanly in the “nail pocket”.*** |  |  |
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|  |  |  |
| ***14. Recommended nail spacing is 8 to 10 inches along the length of each board.*** |  |  |
| ***15. Avoid nailing closer than 4 inches from the end of the plank.*** |  |  |
| ***16. As with the other rows, connect the short edges first and use a pull bar to tap the*** |  |  |
| ***long edges together.*** |  |
|  |  |
| ***17. Always check your working lines to be sure the floor is still aligned.*** |  |  |
| ***18. The last row may require rip cutting the planks to size.*** |  |  |
|  |  |
| ***19. The last two rows will need to be secured in the same manner as the first two.***

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***Full Spread Glue-Down Installation Method******Recommended Adhesive Products******Bamboo Flooring Hawaii recommends using amoisture barrier systems in accordance with manufactures specifications. See recommended list.Remember: Always Follow Flooring AdhesiveRecommendations. Bamboo Flooring Hawaii does not warrant against adhesive related problems.******Recommended Glue-Down Floor Tools******• Flooring adhesive (see recommendations) • Undercut or jamb saw******• Adhesive trowel as recommended by adhesive manufacturer • Hammer******• Underlayment (see Moisture Barrier Requirements) • Tape measure******• Tapping block (trimmed piece of flooring) • Chalk line******• Wood or plastic spacers (3/4”) • Carpenter square******• Flat bar or pull bar • Earplugs and safety glasses******• Miter saw (chop-saw)******Glue-Down Installation Steps***1. ***Before you start, ensure that the job site, subfloor and environmental conditions are acceptable for installation of Bamboo Flooring Hawaii’s floors. All requirements specified in Bamboo Flooring Hawaii’s Installation Guidelines must be met.***
2. ***Seal concrete subfloor with a recommendedMoisture Barrier prior to installation.***
3. ***Allow at least a 3/4” space for expansion around the perimeter of the room and all vertical objects using spacers. Also see section: “Expansion Space is Required”.***
4. ***Dry-lay a couple rows before starting installation to confirm your layout plan.***
5. ***Begin installation next to an outside wall. This is the best reference for establishing a straight working line.***
6. ***Lay the first row of flooring with groove facing the wall. Starter rows should be secured by blind nailing and gluing.***
7. ***Connect short side of second plank together with mating side of the first plank.***
8. ***Cut last plank and complete row. Use the remaining plank to start second row.***
9. ***Offset end joints of consecutive rows by a minimum of 6” for best appearance.***
10. ***With the first row in place, trowel out some adhesive and lay second row by connecting short edges of planks first. Use a pull bar to tap long edges together.***
11. ***Always check your working lines to be sure the floor is still aligned.***
12. ***Use tapping block to fit planks together, but be careful not to let installed floor move on the wet adhesive while you are working.***
13. ***The last row may require rip cutting the planks to size.***
14. ***Flooring planks on perimeter of room may require weight on them until adhesive cures enough to hold them down.***

***After Installation**** ***Always remove any adhesive from the surface of the flooring (smudges, fingerprints, etc.) before it dries. Use a recommended Adhesive Remover to immediately remove any adhesive on flooring surface as you go.***
* ***Allow the newly installed floor to fully cure based on adhesive recommendations before walking or moving furniture onto the floor.***

**C:\Users\Belle\Desktop\bamboo.png**General Care Guidelines* Bamboo Flooring Hawaii recommends you vacuum (Dyson V6 or V8) or sweep the floor on a regular basis or as needed to remove dirt, sand or grit (Swiffer or broom).
* Soak up spills immediately using a dry towel or dry mop.
* For general cleaning, use a hardwood floor cleaner and a hardwood floor mop.
* Fit furniture legs with felt tips or protective caps. Fix rolling furniture with soft rubber casters. Pick up heavy furniture or appliances; do not slide.
* Keep pet nails trimmed to avoid excessive scratching.
* Maintain relative humidity between 40%-65% for extended periods of time.
* Never wet-mop a hardwood floor. Standing water may cause permanent damage.
* Never use any of the following products on your floor: ammonia-based cleaners, mineral spirits, acrylic finishes, wax-based products, detergents, bleach, polishes, oil soap, abrasive cleaning soaps, or acidic materials such as vinegar. Never apply wax treatments to your floor.
* Use interior and exterior doormats at entrances to prevent dirt and moisture from being tracked onto the floor.
* Area rugs are also recommended in front of kitchen sinks and in high traffic areas.
* Do not use rugs with solid rubber or vinyl backings. Rugs must be made of a breathable material to prevent moisture entrapment. We recommend using a breathable rug underlay. Mesh or grid patterns are best.
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**SUBSTRATE EVALUATION**

**Type: Concrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Wood\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Grade: \_\_\_\_\_\_\_\_Above \_\_\_\_\_\_\_\_\_\_Below**

**Moisture Meter Used: \_\_\_\_\_ RH \_\_\_\_\_ Meter \_\_\_\_\_ CaCI \_\_\_\_\_Other\_\_\_\_\_**

**Results: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Please attach photo of results.**

**Note concerns: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**INSTALLATION**

**Method of install: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Adhesive used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_\_**

**Nails used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Yes \_\_\_\_\_ No\_\_\_\_\_\_\_**

**Underlayment used:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_\_**

**Moisture Barrier used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_\_**

 **# of coats used:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Expansion space used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Moldings used:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**NOTES \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**RECOMMENDED LIST OF PRODUCTS**

Moisture Barriers

Wakol PU 280 Moisture Barrier

Bostik’sSlab Cote

Primer

Wakol D 3045

Adhesives and Remover

Wakol MS 260 Flooring Adhesive

Bostik’sBest

Bostik’s Ultimate Adhesive Removal

Flooring Cleaner

Loba Floor Cleaner

Bona Hardwood Floor Cleaner

**IMPORTANT: FOLLOW THE MANUFACTURE’S INSTRUCTIONS COMPLETELY AND ACCURATELY. FAILURE TO FOLLOW INSTRUCTIONS MAY VOID THE WARRANTY OF YOUR FLOOR.**

***Questions and Answers***

***What is the best way to mop my Bamboo Flooring Hawaii floor?***

***Never wet (or damp) mop your floor. Standing water can damage the floor. You may periodi***

***cally use a very slightly dampened (near dry) mop to spot- clean; however excessive moisture will dull the finish. For wood flooring in the kitchen, place an area rug in front of the kitchen sink. We recommend using Bona Pro Hardwood Floor Cleaner & Bona Pro Hardwood Floor Mop to clean your floor.***

***How can I protect the finish of my bamboo floor from wear over time?***

***Sweep and vacuum your floor regularly using a broom or dust mop. Brush or felt vacuum heads are recommended as opposed to vacuums with beater bars or hard heads. Use throw rugs both inside and outside doorways to prevent debris from being tracked onto floors. Keep pet’s claws trimmed to avoid excess scratches. Avoid contact with excess moisture. Avoid walking on your floors with cleats, sports shoes and high heels. Do not slide heavy furniture or appliances across the floor.***

***What are the best environmental conditions for my flooring?***

***As a general rule, with geographic exceptions, flooring will perform best when the interior environment is controlled to stay within a relative humidity range of 40%-60% and a temperature range of 60° to 80° Fahrenheit. (In some climates, the ideal humidity range might be higher or lower – 25 to 45 percent in desert areas for example.) It is the owner’s responsibility to maintain appropriate conditions via the use of humidifier and/or de-humidifier. In homes in which occupants are there for a short period of time (weekend home or vacation cabin), or in rooms that are closed off (not heated or air conditioned) to save energy, ventilation is a must even when the home is not occupied.***

***How do I fix a scratch on my finish?***

***If the scratch is white, the finish has not been compromised and is repairable. Simply using a flooring cleaner should eliminate these blemishes. If the scratch is deeper but the raw wood is not exposed, light buffing with a white polishing pad can shine up the dull area. Often the damage becomes less obvious. When removing stains from any wood floor, always begin at the outer edge of the stain and work toward the middle.***

***My wood floor was damaged through the finish. Can it be repaired?***

***If you have a minor chip or slight damage, this may be minimized with a colored wax. Color Rite Caulk and Mohawk Fill Sticks are wood fill products that work great to reduce the appearance of deeper blemishes. For light scratches we recommend Tibet Almond Stick. If the damage is severe enough, board replacement is typically the best option. To match your floor repairs, we suggest that you take a sample of the flooring to your local hardware store. In most cases, more than one shade may be appropriate.***

***Can I refinish my Strand Woven Bamboo Floors?***

***Major modifications are not recommended and are never a guaranteed solution; all repairs are unique. Excessive sanding is not covered under warranty. Nevertheless, the method of refinishing Bamboo Flooring Hawaii’s Floors is the same as any hardwood flooring. An aluminum oxide coating is advisable. Please always seek assistance from an NWFA Certified Specialist, and always test on a sample plank before you proceed.***

***Can I put heavy furniture on floated flooring?***

***Heavy furniture (500+ lbs.) may obstruct the free, natural movement of a floated floor. Restricting this movement in certain areas can lead to problems such as buckling or separation when the floor experiences natural expansion and/or contraction.***

***Occasional Flooring Noise***

***Floor noise is normal and will vary from one installation type to the next. Occasional noise is due to structural movement and may relate to sub-floor type, flatness, deflection, and/or related to the fasteners, changes in environmental conditions, relative humidity and the amount of topside pressure applied to the flooring. For these reasons floor noise is not considered a product or manufacturer defect.***

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**Moisture Management for you Bamboo Floors**

Bamboo is an organic material that reacts to its environment. It is hygroscopic, which means that it absorbs and loses moisture in reaction to its surrounding environment. In humid environments, bamboo floors gains moisture and swells. In dry environments, a bamboo floor loses moisture and shrinks. This is completely normal and happens at all stages of the bamboos’ life cycle, even as the plant is growing in the forest.

**Why is it so important to manage the moisture in my environment?**

If bamboo floors gains or loses too much moisture, problems can occur.

Bamboo floors that gains too much moisture can cup. Cupping occurs across the width of a floor board, with edges that are raised on each board and centers that are lower than the edges. Cupping always happens due to a moisture imbalance through the thickness of the board.

Bamboo floors that lose too much moisture can gap. Gapping occurs between floor boards. Gaps can vary in size and are considered normal if they appear and disappear during seasonal changes in humidity. Gaps are not considered normal if they are large or do not close during more-humid months.

Both of these issues can be minimized by maintaining an environment that is consistently between 60-80 degrees Fahrenheit, and 30-65% humidity. Significant fluctuations outside these ranges can result in cupping or gaps.



**How Moisture Affects Hardwood and Strand Woven Bamboo Flooring**

Wood and Bamboo flooring is a natural product that responds to humidity variations by expanding and contracting even though the wood has been dried, cut and processed into flooring. Sometimes these changes may be noticeable. During warm and humid summers wood expands. During dry winter weather, hardwood contracts. This seasonal movement is normal for hardwood flooring. The best way to reduce such movement is by installing humidity controls and making sure that they function before flooring is installed.

Wood and bamboo is a hygroscopic material. This means that when wood or bamboo is exposed to air, it will dry or pick up moisture until it is in equilibrium with the humidity and temperature of the air. Moisture absorption causes wood or bamboo to swell. Moisture loss causes the floors to shrink. Shrinkage of the floors begins at 25-30% moisture content. Swelling occurs as the floors increases in moisture content from 0% to 25-30% moisture content. Above 25%-30% the floors are dimensionally stable.

Hardwood or Strand Woven bamboo does not shrink or swell equally in all directions. A change in moisture content of a flooring piece from 0% to 28% will increase the size of the piece approximately 0.1% along the **length** of the board, and 5% to 15% change in size in **width** of the strip with plain sawn flooring.

**Winter Time (Not Applicable to Hawaii)**

In the winter time when homes are heated and the air is dry, the flooring gives up some of its moisture and contracts as a result. When this happens, thin gaps can appear between planks. This is normal, and a homeowner should be prepared for it to occur. Once indoor heating is turned off in the spring and humidity levels rise again, most of the gaps will close up.

To avoid these separations, try to control and monitor air humidity levels during the dry season by installing a humidifier in the furnace or bringing a movable humidifier into the room that has good air circulation. Optimal humidity level falls in 40-65% range. As long as humidity does not fall lower than 40%, no gaps at all will appear between the planks. Installing a simple humidity meter will allow you to monitor and control humidity levels in your home all year round.

**Summer Time**

During warm and humid summers when indoor humidity can rise up to 90%, the opposite occurs. Wood and bamboo absorbs moisture from the air and expands as a result. Even just a few days of exposure to high humidity can cause wood flooring to cup. When a floor board cups, its edges are higher than its center. Cupping can also happen when spilled water is absorbed by the floor. Once cupping has occurred, it takes a while for the floor planks to restore its internal moisture and flatten out.

When extensive moisture or humidity causes the floor to expand significantly, adjoining boards start pressing against each other. In extreme cases, this increased pressure can cause the affected boards to lose their structural integrity and crack. To avoid cupping, keep indoor humidity level in your home or job site (prior to hardwood installation) within 40-65% range. Never allow indoor humidity to rise over 65%. Maintain optimal humidity levels by keeping air conditioner or dehumidifier running during hot humid summer weather.

**KNOW YOUR WOOD OR BAMBOO FLOOR**

**Wood Flooring Expansion and Contraction**

Unlike many floor coverings, wood and bamboo floors can last the lifetime of the building in which they are installed. Home owners who want them to last that long, however, should note the number one enemy of a hardwood and bamboo floors: **moisture**. Wood and bamboo floors naturally expand when moisture is present and shrink when it is not. Whether the reactions are a problem or not depends on the severity of the situation. Following are some of the common results when water and wood floors combine.

**CRACKS BETWEEN BOARDS:**Almost every wood and bamboo floor endures some expansion and contractionas seasons and humidity levels change. When homes are heated, humidity levels plummet, boards shrink and spaces appear between the boards. In dry months, cracks can easily develop to the thickness of a dime on a typical solid 2¼ inch oak floor, with light-colored woods making the cracks appear larger. Plank floors also will show cracks more. These spaces are to be expected and usually close up as the season changes and moisture returns to the air. To reduce the degree of change, home owners can add moisture to the air during the dry months, ideally by installing a humidifier in the furnace or air conditioner.



**CUPPING:**As with cracks between boards, both cupping and crowning are natural reactions to moisture and should not be a concern if they occur only to a minor extent. More severe cases, however, indicate a serious moisture problem.

“Cupping” describes a condition in which the edges of a board are high and its center is lower. Humidity is usually the culprit, although cupping also can happen after water has been spilled onto the floor and absorbed into the wood. The moisture causes the wood to swell, crushing the boards together and deforming them at the edges. In order to repair the floor, the cause of the moisture must be identified. Most often, indoor humidity will have to be controlled. Other causes could include situations such as a plumbing leak in the basement, which can allow moisture to migrate up into the subfloor and flooring.

Once the cause of the moisture is controlled, cupping usually can be reversed. Oftentimes the floor Cupping may naturally dry out and improve over time. Fans may be necessary to speed the drying process. After the floor has dried, it may be necessary to recoat the floor with finish, or to sand and refinish the floor.



**CROWNING:**“Crowning” is the opposite of cupping: The middle of the board is higher than the edges of the board. This can occur when the surface of the floor encounters moisture. More often, it results when a floor has been sanded too soon after it has cupped. When this happens, the top edges of the board are sanded off, and thus are lower than the rest of the board when it returns to a normal moisture content.

**BUCKLING or TENTING:**Buckling is one of the most extreme reactions to moisture that can occur with a hardwood floor. It happens when the floor literally pulls away from the subfloor, up to heights as high as several inches. Fortunately, buckling is an uncommon occurrence, usually happening only after a floor has been flooded. Even in such cases, it is possible that a floor can be repaired instead of being totally replaced. A lack of expansion allowance will create a tenting effect.

**THE VACANT HOUSE - "Greenhouse Effect":**Security -conscious vacationers, a homebuilder's unsold inventory, whenever a wood floor is deprived of an air flow in the environment, it can and will misbehave. Ventilation helps avoid damage caused by expansion and contraction because it not only allows moisture to be removed from the air, but will help retain constant temperatures. For tropical climates, a dehumidifier or ACmay be an option to intermittently run on a timer with your air conditioner.

**Preventing Moisture Problems**

* Controlling humidity is the most important factor in preventing problems with moisture and your wood floor. The correct maintenance also will go a long way in avoiding problems.
* Clean your wood floor with a cloth lightly dampened by a recommended cleaning product, using the manufacturer’s directions for use. It is best to buy a “floor care kit” recommended by your wood floor installer or retailer.
* Do not clean your wood floors with water or water-based products on a regular schedule — clean only when necessary and clean only the soiled areas.
* Never damp mop a wood floor. The water deteriorates the wood and the finish.
* Never let a water spill dry on the floor.
* In order to meet temperature requirements, use an air humidifier during the dry season, and use an air conditioner to maintain acceptable humidity during humid summers. We recommend buying a combined digital temperature/moisture meter in order to monitor indoor conditions all year round.

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