

INSTALLATION INSTRUCTIONS

FOR ALL HAWA BAMBOO & WOOD FLOORING PRODUCTS

Please read and review the entire Installation Instruction Guide before proceeding with the actual installation

OWNER / INSTALLER RESPONSIBILITY Hardwood flooring is a beautiful and unique product of nature, which is characterized by distinctive variations in grain and color. These natural variations in color and grain are not flaws, but are a part of the natural beauty and uniqueness of hardwood flooring (these inherent variations should be expected and serve to enhance the natural beauty and enduring charm.) HAWA floors are manufactured in accordance with accepted industry standards, which permit a defect tolerance not to exceed 5%. The defects may be of a manufacturing or natural type. (Remember: No two hardwood floors are alike.)

The installer assumes all responsibility for final inspection to ensure the quality of the flooring. This inspection of all flooring should be done before installation. Carefully examine the flooring for color, finish, moisture content and quality before installing it. Use reasonable selectivity and cull out or cut off pieces with glaring defects. If material is not acceptable, **DO NOT INSTALL** and contact your HAWA flooring dealer/distributor immediately.

INSTALLATION CONSTITUTES ACCEPTANCE. Do not contact HAWA Bamboo & Wood Products Corp.; they will be unable to accept your claim and this will only delay the process.

HAWA BAMBOO & WOOD PRODUCTS CORP. declines any responsibility for job failure resulting from or associated with inappropriate or improperly prepared sub-floors or job site environment deficiencies. The use of stain, filler or putty stick for the correction of defects during installation should be accepted as normal procedure.

When HAWA flooring is ordered, a 5 - 10% waste factor, depending on layout, must be added to the actual square footage amount needed (diagonal Installations may require more).

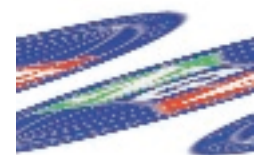
Before beginning the installation of any hardwood flooring product, the installer must determine that the control of environment at the job site is operational before, during and after the installation and the type of the sub-floor involved is acceptable, according to industry standards, ensuring that it meets or exceeds all requirements which are stipulated in the HAWA Flooring Installation Instruction Guide which follows.



ISO 9001: 2000



ISO 14024: 1999



ISO 14001: 2004



JOB SITE INSPECTION & ACCLIMATION

In new construction, HAWA flooring should be one of the last items installed. All work involving water or moisture (plumbing, plaster /drywall ceilings or wall finishes, painting, etc.) should be finished with ample time allowed for complete drying prior to wood flooring being installed. Heating and air conditioning systems should be fully operational maintaining a consistent room temperature of 60° to 70° F and a constant relative humidity range of 35% to 65%, before, during and after actual installation.

Flooring should not be delivered until the above guidelines are completed. Concrete and plaster should be cured and at least 60 to 90 days old. Check basements and under floor crawl space to be sure that they are dry and well ventilated to avoid damage caused by moisture. HAWA recommends a minimum of 6 mil vapor barrier placed on 100% of the surface of the ground in crawl spaces not finished with cement.

After you inspect the quality, finish, color and moisture content of the product, open all boxes for proper acclimation. Flooring boards up to 3-5/8" wide should be at the jobsite at least 48

hours prior to installation. For planks wider than 3-5/8" one week is recommended. Handle flooring with care. Do not stand on ends or sides. Store HAWA flooring flat, with proper support on the ends and center sections in a dry place, being sure to provide at least a four-inch air space under and around cartons. Stack the cartons 3-4 high to ensure efficient acclimation.

Do not store directly upon on concrete or next to outside walls. Cartons should be placed as close to the center of the installation area as possible, away from exterior walls, windows, and doors. Keep out of direct sunlight and away from air vents.

REQUIRED TOOLS AND ACCESSORIES

- Hand Saw or Electric Saw (Carbide Tip Blade Recommended)
- Utility Knife & Tapping Block • Spacers (3/8" to 9/16")
- Safety Equipment (Goggles & Mask) • Tape Measure •
- Carpenter's Square • Soft Rubber Mallet • Broom • Pull Bar
- Broom • Pull Bar • Hammer

FOR NAIL / STAPLE DOWN INSTALLATION ONLY (*)

See diagram below:

FLOORING THICKNESS	NAILER BRAND	NAILER MODEL	NAILS	GAUGE
For 5/8" thick solid bamboo flooring	Powernail	Model 50P (Pneumatic); 50M (Manual)	L cleats 1 -1/4" or 1-1/2"	18
	Powernail	445/45R (Pneumatic); 45 (Manual)	L cleats 1-1/2"	16
	Primatech	Model Q550 (Pneumatic)	L cleats 1-1/4" or 1-1/2"	18
	Primatech	P250/P210/P240 (Pneumatic)	L cleats 1-1/2" or 1-3/4"	16
	Primatech	Q500/Q510 (Manual)	L cleats 1 -1/4" or 1-1/2"	18
	Bostitch	MIIIFN (Pneumatic)	L cleats 1-1/2"	16

FLOORING THICKNESS	NAILER BRAND	NAILER MODEL	NAILS	GAUGE
For 3/4" thick solid hardwood flooring	Powernail	445/45R (Pneumatic); 45 (Manual)	L cleats 1-1/2" or 1-3/4"	16
	Primatech	P250/P210/P240 (Pneumatic)	L cleats 1-1/2" or 1-3/4"	16
	Porta-Nails	421 (Pneumatic); 402 (Manual)	Porta-Nail cleats 1-1/2"	16
	Bostitch	MIIIFN (Pneumatic)	L cleats 1-1/2"	16

FLOORING THICKNESS	NAILER / STAPLER	NAILER / STAPLER MODEL	NAILS / STAPLES	GAUGE
For 5/8" thick engineered bamboo flooring;	Powernail	Model 200 (Pneumatic); 250 (Manual)	L (E-Powercleats) 1 -1/4" or 1-1/2"	20
5/8" thick engineered wood flooring; and 9/16" thick engineered wood flooring	Powernail	Model 50P (Pneumatic); 50M (Manual)	L (E-Powercleats) 1 -1/4" or 1-1/2"	18
	Primatech	Q550 (Pneumatic)	L cleats 1-1/4" or 1-1/2"	18
	Powernail (Stapler)	445FS (Pneumatic Stapler)	½" Crown Staples 1-1/2"	15-1/2
	Primatech (Stapler)	P250/P220/P260 (Pneumatic Stapler)	½" Crown Staples 1-1/2"	15-1/2
	Bostitch	EHF1838K (Pneumatic Stapler)	Narrow Crown Staples	18

(*) Some models require adapter base plates to nail 5/8" thick bamboo or engineered wood flooring. For detailed information about hardwood flooring nailers and accessories, refer to manufacturer's product information: Powernail: www.powernail.com Porta-Nails: www.porta-nails.com Primatech: www.primatech.ca/nailers.htm Bostitch: www.bostitch.com

Note: Use only a flooring nailer that engages the top profile over the tongue at the appropriate angle. Make sure that the flooring nailer is in good working condition and seats properly against the board to prevent top edge and surface damage. Important: Set air compressor to 70-80 PSI (or follow manufacturer's suggested PSI setting). Adjust the air pressure to ensure proper setting of staples. If tongue damage occurs, lower the air pressure.

Important: If you need to remove a side nailed staple, do not pull straight up from the tongue. This will damage the surface of the board. Instead, pull out the staple from the tongue at the front of the board with all pressure from the hammerhead directed into the sub-floor.

FOR FLOATING INSTALLATIONS YOU WILL ALSO NEED

- WHITE Flooring Adhesive
- Adhesive Remover
- Damp and Dry Towels

FOR GLUE DOWN INSTALLATION YOU WILL ALSO NEED

- 100 or 150 lb. Roller
- Approved BOSTIK BEST, BOSTIK TKO Adhesive or DRI-TAC 7500 ADHESIVE
- BOSTIK Adhesive Remover or equivalent
- Notch Trowel (see adhesive can label for type)
- Damp and Dry Towels

Sub-Floor Preparation

Approved Sub-floor Types:

- 1) APA approved 5/8" minimum thickness, preferred 3/4" or thicker exterior grade plywood, on 16" center 2"x10" joists. Note: When installing and fastening approved plywood, please refer to specific structural panel manufacturer's instructions.
- 2) 3/4" (23/32") OSB on 16" center, 2"x10" floor joists properly nailed. When installing hardwood over engineered joists and truss systems that are spaced wider than 16" on center, it may be necessary to add an additional layer of sub flooring or use additional cross bracing to stiffen the system, reducing excessive deflection.
- 3) CONCRETE SLAB. HAWA Engineered Wood Flooring Products can be installed on all grade levels. Concrete slabs must be clean and dry (less than 3 lbs. /1000 sf. / 24 hr.- per CCTM).
- 4) Existing Hardwood floors (installed at right angle, only over existing wood sub floors).
- 5) Resilient tile and sheet vinyl only over an above mentioned and approved subfloor.

Sub-floor must be:

- CLEAN, scraped or sanded, swept, free of wax, grease, paint, oil and other debris
- SMOOTH & FLAT within 1/8" in a 6' span. Sand high areas or fill low areas with cement base leveling compound- no less than 3000 p.s.i. rating.
- STRUCTURALLY SOUND. Nail or screw any loose areas that squeak or reveal movement. Replace any damaged sub-flooring or underlayment.
- DRY. Moisture content of wood sub-floor must not exceed 14% prior to installation of wood flooring.

Remember: All moisture testing must be performed before and after, the wood has been acclimated 48 hours and all job site requirements have been met.

Note: When installing and fastening approved plywood, please refer to specific structural panel manufacturer's instructions. Wood Substrates: Test the moisture of the wood substrate using a calibrated moisture meter approved for testing wood moisture according to the meter manufacturer. The reading should not exceed 14%, or read more than a 5% difference than moisture content of products being installed.

Concrete Slabs: All concrete sub floors must be tested for moisture content prior to installation of the hardwood flooring. The moisture content of the concrete sub floor must register dry, according to whichever test method is used to determine the slab condition.

Note: Pre-existing, wood panels or strips must be removed from the concrete slab before installing new hardwood.

Important: Set air compressor to 70-80 PSI (or follow manufacturer's suggested PSI setting). Adjust the air pressure to ensure proper setting of staples. If tongue damage occurs, lower the air pressure.

Important: If you need to remove a side nailed staple, do not pull straight up from the tongue. This will damage the surface of the board. Instead, pull out the staple from the tongue at the front of the board with all pressure from the hammerhead directed into the sub-floor.

Wood Substrates: Test the moisture of the wood substrate using a calibrated moisture meter approved for testing wood moisture according to the meter manufacturer. The reading should not exceed 14%, or read more than a 5% difference than moisture content of products being installed.

Installation on Concrete Slabs:

Below are methods to test to indicate moisture is present in the concrete sub-floor:

1) Use an approved calibrated concrete Moisture Meter as a preliminary measurement for moisture such as:

- Delmhorst Moisture Meter Model G
- Tramex Concrete Encounter (follow manufacturer's specific calibration requirements).

2) Perform a poly-film mat test. Tape down 3' x 3' poly-film squares, in several places on the floor- (one every 200 sf.).

3) Wait 24-48 hours, remove and check for the appearance of condensation or a darkening of the concrete slab.

4) Either occurrence signals the likely presence of excess moisture, requiring a mandatory Calcium Chloride Test.

If you have determined that the slab has excessive moisture, then Calcium Chloride and PH alkalinity tests must be performed to determine the moisture content, vapor emissions, and alkalinity levels in the concrete floor. Test evaluations will determine what corrective measures need to be taken.

Perform a Calcium Chloride test according to the manufacturers' instructions. The maximum acceptable reading is 3 lbs./1000 sq. ft /24 hours for moisture emissions.

Perform a PH Alkalinity Test according to the manufacturers' instructions. A pH reading of 6-9 on a pH number scale of 1-14 is acceptable.

If the test results exceed these readings, the concrete slab should be sealed with an appropriate sealer that will correct high emissions, as per the sealant manufacturers' recommendations. Also check all site drainage to make sure all exterior water flows are directed away from the job site.

Installation on Plywood and Wood Substrates:

Do not install over particleboard, with exception of products that can be installed using the floating installation method. Sub-floor should be constructed of 5/8" or thicker plywood when installing directly over 16" on center 2"x10" joists. Plywood sheets should be laid with grained outer plies at right angles to joists; adjacent rows staggered four feet and nailed every 6" along each joist with 7D or larger nails. When installing new hardwood flooring directly over an old wood or strip wood floors, sand any high spots. Re-nail the old floor to eliminate squeaks or loose boards, and install new planks at right angle (perpendicular) to the old floor. The moisture content of the wood or plywood sub-floor should not exceed 14%.

Important: Do not install any HAWA flooring product using the glue down installation method over any vinyl asbestos flooring, vinyl composition tile, linoleum, asphalt tile, ceramic or stone tiles, carpet, or vinyl sheet products. Use a HAWA engineered floor that is required for the Floating Floor Installation Method.

Nail or Staple Down Installation Method

Nail down installation applies to the following HAWA products:

- ✓ HAWA solid bamboo flooring and Strand Woven;
- ✓ HAWA engineered bamboo flooring;
- ✓ HAWA solid oak, maple and birch flooring;
- ✓ HAWA engineered oak and maple flooring;
- ✓ HAWA engineered hand-scraped oak and maple flooring;
- ✓ HAWA solid exotic collection;
- ✓ HAWA engineered exotic collection.

NOTE: See recommended nails/nailers on Page 2.

Staple down installation applies to the following HAWA products:

- ✓ HAWA engineered bamboo flooring;
- ✓ HAWA engineered oak and maple flooring;
- ✓ HAWA engineered hand-scraped oak and maple flooring;
- ✓ HAWA engineered exotic collection

NOTE: See recommended staples/staplers on Page 2.

JOB SITE PREPARATION

- Always acclimate the product for 48 hours prior to installation.
- Verify that the floor is level and structurally sound. Repair as needed. Undercut door case moldings as needed.
- Remove any existing wall base, shoe molding, quarter round or doorway thresholds.
- Cover the clean surface, wall to wall, with 15 lb. black asphalt saturated with 6" overlap at seams.

Note: Per NWFA, Red Rosin paper is not recommended.

Step 1: ESTABLISH A STARTING POINT

Before beginning the actual installation, start a random layout of the flooring by arranging short and long lengths equally over the areas where the flooring is to be installed.

Work out of several cartons at a time to ensure proper color and shade mixture.

Align the first row of planks to be sure you have a good straight line from one side of the room to the other. Snap a chalk line at the desired distance from the wall to help align the planks. The end joints of plank or strip flooring should be staggered to achieve the best appearance in the finished floor. (Minimum 6-8" for 3" planks, 12-24" for longer, wider 4-7" planks).

Important: Leave the proper amount of expansion space recommended at all sides of installation. (Normal rule of thumb is to have the expansion space equal the thickness of the wood). Example: 5/8" thick wood planks require a 5/8" expansion space.

Step 2: INSTALLING THE FLOOR

Align the first piece on the chalk line. The groove side and end will be facing the starting wall. To avoid splitting the wood, pre drill holes then drive 7D or 8D finish nails, or 2" pneumatic nails, into the face of the board every 12" approximately 1/3" - 3/4" from the edge closest to the starting wall and within 2" - 3" from the ends and in the darker grain of the wood.

Edge nail the plank by driving the same type fasteners at a 50° angle through the tongues of the planks in the first row of planks, spacing the nails every 8" - 10" and within 2" - 3" from the ends. This process should be repeated for each piece in the entire first row. Upon completion of the first row, go back and sink the face nails with a nail punch. If it appears that the holes will not be covered by the wall base or quarter round trim, fill the holes with wood filler designed to blend with your wood floor.

Note: Typically the first few rows must be edge nailed by hand rather than with a nailing machine due to a vertical wall obstruction. When clearance allows, use the appropriate nail/staple tool, which drive fasteners, simplifying and speeding up the nail/staple process. Install each successive row of planks by edge nailing the tongue side every 8" - 10" to within 2" - 3" from board ends.

Be attentive to staggering the ends of the boards appropriately in adjacent rows to avoid clustering end joints. Upon reaching the last row to be installed, the planks should be ripped to allow proper expansion space. The last rows must be fastened by nailing approximately 1/2" to 3/4" from the back edge of the board every 12". Use the same process of counter sinking the face nails and applying wood filler as used on the starter wall. Make sure when the installation is complete that the expansion space is covered with the correct molding. Cover the clean surface, wall to wall, with 15 lb. black asphalt saturated felt paper butting the edges together.

Glue Down Installation Method

Glue down installation applies to the following HAWA products:

- ✓ HAWA solid bamboo flooring;
- ✓ HAWA engineered bamboo flooring;
- ✓ HAWA engineered oak and maple flooring;
- ✓ HAWA engineered hand-scraped oak and maple flooring;
- ✓ HAWA engineered exotic collection

NOTE: See recommended adhesives on Page 3.

JOB-SITE PREPARATION

- Undercut door case moldings as needed.

- Remove any existing wall base, shoe molding, quarter round or doorway threshold moldings.

Step 1: GETTING STARTED

Install the flooring parallel to the longest wall in the room. Measure out from the wall in two places allowing the proper expansion space. Mark and snap a chalk line across the two marks. Glue the first row and place spacers against the walls to secure the row in place. Continue installing the floor from left to right. Spread only enough glue to install what can be set within 45 minutes. Planks can be set directly into wet glue (wet set). Work your way out of the room. After the install is completed, keep the floor free from foot traffic for a minimum of 8-12 hrs. to allow adhesive to properly set.

Step 2: SPREADING THE WOOD FLOOR ADHESIVE

Always refer to the specific instructions on the authorized hardwood flooring adhesive label.

Only trowel enough adhesive to set 30-45 sq.ft. of wood. The hardwood can be "wet set" into the adhesive which has 45 minute open working time to secure the row in place. Continue installing the floor from left to right. Spread only enough glue to install what can be set within 45 minutes. Planks can be set directly into wet glue (wet set). Work your way out of the room. After the install is completed, keep the floor free from foot traffic for a minimum of 8-12 hrs. to allow adhesive to properly set.

Step 3: STARTING THE INSTALLATION

The flooring should be installed from several cartons at the same time to ensure proper color, grain and shade mix. Proper expansion spacing is required on all installations.

Working from the sub-floor and not on the hardwood from left to right, lay the next board and continue working towards the right until you need to cut a piece to complete the first row. Measure the size you need to complete the first row and cut to length. The balance of the piece you cut may possibly be used to start the next row, if the length is a minimum of 12". Be attentive to staggering the ends of the boards correctly in adjacent rows to avoid clustering end joints. A tapping block/hammer can be used to tap the boards until they are in proper position. Lock the row in place using spacers against the wall in the expansion space.

To protect the face of the boards, always saw with the teeth cutting into the face of the board.

For Wood Sub-floors: If you are working on a wood type sub-floor, you may want to use small finishing nails to hold the first row in place. Fill nail holes with wood filler designed to blend with your new floor.

Step 4: INSTALLING THE HARDWOOD

Complete the rest of the installation by spreading enough adhesive to install 45 sf. at a time. Continue to dry rack when the hardwood so that you maintain the correct end joint stagger, then continue setting the hardwood into the adhesive ready. Make sure that there is 100% contact between the hardwood and the adhesive. Use a clean, smooth, 100-150 lb. roller to roll the flooring at every 150 sf. interval during the installation.

Step 5: INSTALLING THE LAST ROW

Most often the entire length of the last row will need to be cut so that it is narrow enough to fit the remaining space. When this occurs, follow this simple procedure:

Lay a row of boards, unglued, with the tongue toward the wall, directly on top of the last row installed.

Take a short piece of the HAWA floor that is being installed with the face down and the tongue side against the wall. Draw a line with a pencil along the row moving down the wall. The resulting line gives the proper width for the last row which, when cut, can then be wedged into place using the pull bar.

You will need to use the Pull Bar with care to make the last row fit tightly and allowing for proper expansion space.

Leave spacers in the expansion space until the adhesive has cured, then remove. Keep the floor free from foot traffic, for 12-24 hours until adhesive has set securely.

HAWA recommends rolling the floor with a 100-150 lb. clean roller to ensure good adhesive to wood contact.

SPECIAL CIRCUMSTANCES

Doorways: Attempting to continue installing rows through a doorway into another room can be difficult because the narrow opening is a very small base upon which to continue consistent even rows into the next room. T-moldings are available to install in doorways when joining flooring room to room. When using the Floating install method, every doorway less than 6' wide must be transitioned using a T-molding. Floating floor through installs are allowed only if the total length of the flow through does not exceed 40', and the flow through doorway is 6' or wider.

To achieve alignment of plank rows from room to room, it is best to use a master reference line to run through the doorway to the far ends of each room involved. Position the line so that it is square and parallel from each room's corresponding wall. Use this line to align the plank rows from room to room.

Pipes, vents and other fixed objects: Each can be unique, but the general rule is to measure very carefully before you cut and remember to leave a 1/2" expansion gap between the object and the flooring. You will cover expansion gaps with molding, vent covers or pipe rings when the floor is complete.

Installation on Stairs: Working from the top step down, flooring should be installed using adhesive and screw type fasteners or nails. All stair nose moldings must be glued and nailed, or screwed every 8", as a safety precaution.

Always consider that finished hardwood, installed on steps can be a very slick surface, especially when walked on with stocking feet. Use caution when walking on finished steps.

Glue down over cork: Using wood flooring adhesive, Cross Ply Engineered Hardwood can be installed

Over a structurally sound concrete sub floor that is covered with full spread, permanently bonded acoustic cork. Cork thickness should not exceed 1/4" (6.35 mm), with a density between 11.4 and 13 lb / cubic foot. Install cork in accordance with cork manufacturer's recommendations. Acoustic cork should be pure cork with a polyurethane binder.

Floating Floor Installation Method

Floating Floor installation applies to the following HAWA products:
✓ HAWA engineered bamboo flooring.

Approved Sub-floor Types:

All HAWA Engineered Flooring products which have been approved for the floating installation method can be installed over any dry, level, sound sub-floor, regardless of install level or sub floor type. All sub-floors should be covered with approved foam underlayment. When using a basic foam underlayment over a concrete sub-floor, you must also use a 6 or 8 mil. Polyethylene film under the foam pad, which acts as a vapor barrier.

Note: Any pre-existing wood panels or strips that are floating or direct glued to the concrete slab, must be removed before installing HAWA engineered flooring using the floating method.

Below Grade: All HAWA engineered bamboo flooring products, when installed using the floating installation method, can be installed below grade. Always check the slab for excessive moisture and perform a PH test to ensure that the slab is suitable for hardwood installation (see Concrete Slabs). Install underlayment or the 6 mil. poly film with end butted together and taped with a clear 2" packaging tape to prevent any moisture from coming up through the seams.

The underlayment or 6mil. polyfilm should be lapped up the wall 4" all the way around the room. This can be trimmed off after moldings are installed. If you are using underlayment, you are ready to begin the installation. However, if you have used the 6 mil. Polyfilm, you need to install an approved basic foam pad on top of the 6 mil poly film butting the edges (but not overlapping).

All seams must be taped with 2" clear package tape when installing over concrete slab.

RADIANT HEATED SUB-FLOORS

Only HAWA engineered Bamboo may be installed over radiant heated subfloors using the "floating method". Do not use the "glue down or staple down" method of installation over this type of subfloor.

Engineered Oak and/or Exotic species such as Brazilian Cherry, Santos Mahogany and Tigerwood cannot be floated over radiant heated subfloors.

Important: Electric heated subfloors are not considered acceptable for installation of any Hawa products. Only water heated subfloors are acceptable.

Follow the below grade instructions (above) for underlayment requirements and installation instructions. Also, use the below requirements when installing over radiant heat systems.

- A. The maximum temperature of sub-floor under normal use should not exceed 70° F (check with heating system manufacturer).
- B. For correct water temperature inside heating pipes, check with manufacturers suggested guidelines.
- C. Heating pipes must be covered with 1-1/4" of concrete or minimum 1/8" below bottom side of plywood sub-floor. In addition, for plywood sub-floor, heat transfer plates or insulation boards must be between pipes and sub-floor.
- D. Before installation of hardwood flooring, heat system must be operated at normal living temperature for a minimum of 28 days. Two days before flooring is delivered for acclimation before installation, switch heating unit off. During the installation, the sub floor must remain 64° - 68° F. Two days after the installation, increase the heat setting gradually at a rate of 2-3° per day to desired temp., (not to exceed the maximum of 70° F).

Use the same procedure to decrease temperature when shutting heat off for the season.

- E. Room temperature should not vary more than 15° F from season to season. Relative humidity should remain between 35% to 65% in the home for radiant heated floor installations.

JOB-SITE PREPARATION

- Undercut door casings
- Remove any existing wall base, shoe molding, quarter round or doorway threshold.

- Important: Do not install cabinets or walls on top of the flooring when using the floating installation method.

Step 1: POSITION THE FIRST ROW

Important: The flooring should be installed from several cartons at the same time to ensure proper color, grain, and shade mix.

1) Before starting, first measure the width of the room, and then divide the room's width by the width of the plank. If this means that the last row of planks will be narrower than 2", then you will need to cut the first row of planks to make it narrower. Cut in such a way that both rows of planks (the first and last to be installed in the room) will have the same approximate width for an overall continuous look. See installing the last row.

Note: To cut the boards, always saw with the teeth cutting down into the face or top of the board. Cutting from the top down helps protect the surface. Use a carbide tip blade to ensure smooth cuts.

2) Begin the installation of the planks in the left-hand corner of the room with the long direction parallel to the longest wall of the room. Always start so that you will be working left to right when facing starting wall. When possible, run the length of the planks in the same direction as incoming sunlight.

Be sure to install the first row of engineered planks with the groove side facing the wall.

Using the proper spacers (depending on the thickness of the flooring), provide a gap for the seasonal expansion of the flooring along the walls of the entire room. Always place expansion spacers against the wall every 2-3'. Also place spacers at each plank end joint connection, as this will make maintaining a good square easier.

Note: Larger rooms require additional expansion space. Add 1/16" to the width of the expansion space for every 3' the room extends beyond 25'. Dimensions exceeding 40' in length or width, requires the use of a T-Molding for expansion.

3) If the starting wall is out of square, it will be necessary to scribe the first row to match the wall, allowing the opposite side of the row to present a true square base for the rest of the floor. When the first row is complete, you must have a straight, even base established. Follow the below grade instructions (above) for underlayment requirements and installation instructions. Also, use the below requirements when installing over radiant heat systems.

- A. The maximum temperature of sub-floor under normal use should not exceed 70° F (check with heat system manufacturer).
- B. For correct water temperature inside heating pipes, check with manufacturers suggested guidelines.

C. Heating pipes must be covered with 1-1/4" of concrete or minimum 1/8" below bottom side of plywood sub-floor. In addition, for plywood sub-floor, heat transfer plates or insulation boards must be between pipes and sub floor.

D. Before installation of hardwood flooring, heat system must be operated at normal living temperature for a minimum of 28 days. Two days before flooring is delivered for acclimation before installation, switch heating unit off. During the installation, the sub floor must remain 64° - 68° F. Two days after the installation, increase the heat setting gradually at a rate of 2-3 ° per day to desired temp., (not to exceed the maximum of 70° F).

Use the same procedure to decrease temperature when shutting heat off for the season.

E. Room temperature should not vary more than 15° F from season to season. Relative humidity should remain between 35% and 65% in home for radiant heated floor installations.

F. Do not use the glue or nail down installation method on radiant heat flooring (use the floating installation method only).

Step 2: GLUING THE BOARDS TOGETHER

When installing the HAWA engineered flooring products, which have been approved for the floating installation method, the boards must be side glued using a white wood adhesive.

Always apply the adhesive into the bottom of the groove on each board. Do not fill the groove. Apply a continuous bead, filling the bottom of the groove no more than halfway full. Start & stop adhesive 2" from the ends on the long side of the board and 1" from the ends on the butt end.

Note: If any excess adhesive squeezes up to the finished surface, wipe it off immediately using Adhesive Remover. Then immediately dry the surface and buff with a dry cloth. If the adhesive has dried, use a soft white cloth moistened with Adhesive Remover. Do not abrade the wood surface.

Step 3: INSTALLING THE REST OF THE FLOOR

Note: Always stagger approximately 12" to 24" between end joints of adjacent board rows. The end joints should not repeat visually across the installed floor.

After installing the first row of boards, apply the adhesive to the first board on the second row using the above gluing instructions. Connect that board to the first row remembering the 12" to 24" stagger between the end joint of the board on the first row. Tap the boards together with a hammer and a tapping block. Be sure that the tapping block is against the tongue only and use only a gentle tapping motion to tap the boards together. Excessive force will damage the board making it difficult to install additional boards. Once the board has been tapped into place, check for a

tight fit on sides and ends. To install the rest of the flooring, continue placing the boards from left to right, building a rack 3 to 4 rows wide, as the installation continues to complete the floor.

Note: When installing around fixed objects, small areas or even in general installation areas, the use of installation straps may prove helpful for securing boards together. Installation Straps are a handy tool that will ensure a tight fit when used to strap continuous rows of hardwood.

Step 4: INSTALLING THE LAST ROW

Most often the entire length of the last row will need to be cut so that it is narrow enough to fit the remaining space. When this occurs, follow this simple procedure:

Lay a row of boards, unglued, with the tongue toward the wall, directly on top of the last row installed.

Take a full width scrap piece of the HAWA flooring product that is being installed with the face down and the tongue side against the wall. Use appropriate spacers against the wall to ensure the proper expansion space. Draw a line along the row moving down the wall. The resulting line gives the proper width for the last row which, when cut, can then be wedged into place using the pull bar. Spacers should remain while the adhesive sets.

Note: Floor should remain free of foot traffic for a minimum of 12 hours while adhesive sets.

A drying time of 24 hours is recommended before any damp-dry mopping, cleaning or heavy objects or furniture can be put back into place.

Make sure when the installation is complete that the spacers are removed and the expansion space is covered with an appropriate molding as described in MOLDINGS, TRIM & TRANSITION PIECES.

Moldings, Trims & Transition Pieces

Installation Tips:

- Moldings should be acclimated 48 hours.
- Moldings must be pre-drilled to avoid splitting whenever they are to be secured with nails or fasteners.
- The tool of choice for cutting hardwood moldings is a 10 or 12" motorized miter saw with pre-set adjustments for
- The basic miter cuts at 22.5°, 45°, and 90°. A carbide tipped blade makes the best cuts. Be sure the saw blade is positioned to cut into the finished face.

- When installing Wall Base molding, eliminate the need to putty as many holes on the molding by placing the bottom nail below the finished line of the Quarter Round.
- On Wall Base or Quarter Round moldings never restrict the hardwood floor's natural contraction/expansion movement by driving the fasteners at a downward angle. Attach the moldings to the wall or vertical surface. Always miter cuts rather than having butt cuts when splicing. Decide the direction of the miter by cutting the molding with the long point oriented in the same direction as your natural line of vision when you enter the room.

Wall Base. Borders the wood floor at the base of the wall to give the room a finished look. This molding along with the Quarter Round conceals the required expansion space between the wall and the hardwood flooring. It is also sometimes used under cabinets and toe kicks.

Quarter Round. This molding conceals the required expansion space between the wall/wall base and the hardwood flooring. It is also sometimes used under cabinets and toe kicks where a wall base won't fit or at the base of the stairs to provide a subtle blend between the floor and the wall or vertical surface.

Threshold. This molding is used at exterior doorways as a transition between flooring and the doorway threshold. It also can be used to transition a wood floor to different floor types to make them fit together perfectly, such as high pile carpeting or tile. Another typical use for a threshold is to conceal the expansion space between the flooring and a vertical surface such as fireplace hearths and sliding glass doors.

Installation. Lay the threshold molding in place to determine a proper fit. The threshold molding should overlap the flooring by 1/2" to 3/4" leaving the balance for expansion. To attach the threshold, nail into the sub-floor behind the lip of the molding. Be sure when nailing not to obstruct the floors expansion space.

T Molding. Doorway molding used to join two wood floors in adjoining rooms. Also used when making transitions from a wood floor to another floor that is approximately the same height, such as ceramic tile, hardwood, or laminate floors. T-Moldings are also used to provide expansion joints when a floor dimension exceeds the length or a width of 40'.

Installation: A space of 1 1/4" between the two adjoining floors is necessary to properly install the molding. This is to allow for the expansion space. Lay the T-Molding in place to determine proper fit. To attach the T-Molding between a ceramic tile floor and the hardwood floor, apply 1/4" bead of construction adhesive to the top edge of the ceramic tile. To attach between two hardwood floors apply the 1/4" bead to the top edge of one side of the hardwood only. Seat the molding in place allowing for a minimum of a 1/4" overlap on the wood flooring. Make sure to allow for the expansion space between the T-Molding and the tile. When

installing over a wood sub-floor, use finish nails to secure T-mold. When installing over concrete, use heavy-duty construction adhesive to secure T-mold.

Overlap Reducer. (Floating Method) Used to join hardwood floors that utilize the floating installation method with floors of different heights such as vinyl, ceramic tile, or low pile carpeting.

Installation: To attached molding pre-drill and nail in appropriate 6" to 8" intervals. Do not nail less than 2" - 3" from the ends of either side. To attach the molding using glue, apply glue to the front edge of the molding. Apply one or two 1/4" beads of construction adhesive to the sub-floor and seat the molding in place. It is important not to attach the reducer directly to the floating floor to allow expansion and contraction.

Overlap Stair Nose. (Floating Method) Provides the proper transition for stairways or steps, which have hardwood floors that have been installed using the floating installation method. The Stair Nose also provides the proper overhang for a transition from one floor level to the next such as the step into a sunken living room.

Installation: To attached molding pre-drill and nail in appropriate 6" to 8" intervals. Do not nail less than 2" - 3" from the ends of either side. Also apply glue to the front edge of the molding. Apply one or two 1/4" beads of construction adhesive to the sub-floor and seat the molding in place. All stair nose moldings must be nailed and glued to secure the molding adequately. It is important not to attach the reducer directly to the floating floor to allow expansion and contraction.

Flush Reducer. Used to join hardwood floors that have been glued down or nailed down to transition with floors of different heights such as vinyl, ceramic tile, or low pile carpeting.

Installation: To attached molding pre-drill and nail in appropriate 6" to 8" intervals. Do not nail less than 2" - 3" from the ends of either side. To attach the molding using glue, apply glue to the front edge of the molding. Apply one or two 1/4" beads of construction adhesive to the sub-floor and seat the molding in place.

Flush Stair Nose. Provides the proper transition for stairways or steps which have hardwood floors that have been

installed by either the nail down or glue down installation method. The Stair Nose also provides the proper overhang for a transition from one floor level to the next such as the step into a sunken living room.

Installation: Lay the threshold molding in place to determine a proper fit. The threshold molding should overlap the flooring by 1/2" to 3/4" leaving the balance for expansion. To attach the threshold, nail into the sub-floor behind the lip of the molding. Be sure when nailing not to obstruct the floors expansion space.

Hardwood Flooring Care & Maintenance

Routine Maintenance

1. Use a damp cloth to blot up spills as soon as they happen. Never allow liquids to stand on your floor.
2. For tough spots, such as oil, paint, markers, lipstick, ink, or tar, use acetone/nail polish remover on a clean white cloth, then wipe the area with a damp cloth to remove any remaining residue.
3. Sweep, dust, or vacuum the floor regularly with the hard floor attachment (not the beater bar) to prevent accumulation of dirt and grit that can scratch or dull the floor finish.
4. Periodically clean the floor with no-wax cleaning products made specifically for pre-finished hardwood floor care.
5. Do not wash or wet mop the floor with soap, water, oil-soap detergent, or any other liquid cleaning material. This could cause swelling, warping, delamination, and joint-line separation, and void the warranty.
6. Do not use steel wool, abrasive cleaners, or strong ammoniated or chlorinated type cleaners.
7. Do not use any type of buffing or polishing machine.
8. For spots such as candle wax or chewing gum, harden the spot with ice and then gently scrape with a plastic scraper, such as a credit card. Be careful not to scratch the flooring surface. Wipe clean with a damp cloth.
9. For tough stains, you may need to use a heavy-duty stain remover made specifically for hardwood floors.
10. A more frequent dust-mopping or vacuuming schedule may be required in very sandy areas such as a beach home.

Environmental Protection

1. Entry mats will help collect the dirt, sand, grit, and other substances such as oil, asphalt, or driveway sealer that might otherwise be tracked onto your floor.
2. Do not use rubber or foam backed plastic mats as they may discolor the flooring finish. To prevent slippage, use an approved vinyl rug underlayment.

3. Use floor protectors and wide-load bearing leg bases/ rollers to minimize indentations and scratches from heavy objects. As a rule, the heavier the object, the wider the floor protector.
4. Maintain a normal indoor relative humidity level between 35 and 65% throughout the year to minimize the natural expansion and contraction of the wood.
 - a. Heating season (Dry): A humidifier is recommended to prevent excess shrinkage due to low humidity levels. Wood stove and electric heat tend to create very dry conditions.
 - b. Non Heating Season (Wet): An air conditioner, dehumidifier, or periodically turning on your heating will help to maintain proper humidity levels during summer months.
5. Avoid excessive exposure to water during periods of inclement weather.
6. Do not walk on your floor with stiletto heels, spiked golf shoes, or other types of sports cleats.
7. Do not allow sharp, pointed, or rough textured objects to be exposed to the hardwood flooring.
8. Keep your pet's nails trimmed to prevent them from scratching your floor.
9. Periodically rearranging your area rugs and furniture will allow the floor to age evenly. UV sunlight will soften the tone of different species of hardwood to varying degrees.
10. Use a dolly when moving heavy furniture or appliances; but first, put down a piece of quarter inch plywood or Masonite to protect the floor. Never try to slide or roll heavy objects across the floor.
11. A protective mat should be used for furniture or chairs with castors.

Repairing Your Hardwood Floor

1. Minor damage to your hardwood floor can be repaired by using a color fill. This special product should be matched to the color of your floor and, when properly used, will make the damaged area virtually invisible. In addition, the repaired area will hold up to traffic and wear.
2. A qualified hardwood flooring installer should repair extensive damage to traditional engineered or solid hardwood flooring.

Warranty

Who is covered?

All warranties in this Limited Warranty Guide are given only to the original retail purchaser of our HAWA pre-finished bamboo and/or hardwood flooring products. Our warranties are not transferable.

What is covered and for how long?

The limited warranties described are subject to the product applications, limitations, disclaimers described and are effective for floors purchased from dealers, retailers and/or distributors. All residential warranties run from the date of retail purchase for the applicable period described of for 25 Years. Our flooring products which have been installed within "commercial establishments" carry a 3-Year Limited Warranty. A 5% margin for error and imperfection is an accepted industry standard and shall not be considered a structural or finishing defect under the terms of this warranty.

What are you responsible for under our Warranty?

To be covered under our warranty (except under the Pre-installation Defects Warranty) you need to retain your retail sales receipt and make sure the flooring is properly installed in accordance with our Installation Instruction Guide provided within each carton of flooring (you must keep and provide in the event of a problem all pre-installation tests for sub-floor, flooring and environmental condition performed). You must maintain your floors in a normal environmental condition meaning that the heating and ventilating systems must be working in order for the relative humidity level (in the air) to be between 35% and 65% and a temperature level between 60° to 70° degrees throughout the year. You must also properly care for your floor using our easy to follow Maintenance Instructions provided with each carton. We recommend that you use only no-wax cleaning products made specifically for pre-finished hardwood floor care to preserve your flooring. Use of wax floor care products, soap, water, oil-soap detergent, or any other liquid cleaning material may damage your floor and void this warranty.

What we will do if any of the covered events occur?

If any of the covered events in this Guide occurs within the warranty periods specified for the respective flooring product, we will recoat, refinish, fill or furnish comparable flooring (of our manufacture and of similar color, pattern and quality), using current local market labor pricing only, for either the repair of the defective area or the replacement of the floor, at our option. In the unlikely event that we are unable to correct the problem after a reasonable number of attempts, we will refund the portion of the purchase price for the section of failed flooring. These warranties do not include removal or replacement of cabinets or other fixtures. These are the exclusive remedies under this warranty. If a defect or other warranted condition occurs, we reserve the right to verify any claims or defect by the use of a certified inspection service and if necessary, have samples removed for technical analysis.

What is not covered under the terms of this warranty?

- a) All flooring installed in bathrooms with a shower, bath tub or sink, of any size.
- b) Damage caused by fire, flooding and other natural disasters or acts of God.
- c) Damage caused by negligence, accidents, misuse or abuse.
- d) Damage caused by vacuum cleaner beater bar or hard wheels.
- e) Damage caused by appliances, furniture and/or casters.
- f) Damage caused from sharp objects.
- g) Reduction in gloss, scratches or indentation due to normal wear and use, pebbles, pets, construction traffic, or failure to maintain as required.
- h) Color, shade or texture variations between samples, printed color photographs or replacement flooring and the actual material.
- i) Color variations between flooring and/or samples and other flooring or wood products, which you wish to match (cabinets, stairs or trims).
- j) Deficiencies related to sub-floor/floor joist assemblies, sub-floor preparation materials, and fasteners including, but not limited to, uneven sub-floor surfaces, floor deflection or voids in the sub-floor.
- k) Noises, squeaks associated with anything than the mis-manufacture of the flooring.
- l) Naturally occurring wood characteristics such as variations in grain, color, mineral streaks and knots.
- m) Changes in color due to exposure to sunlight, artificial light and age.
- n) Natural expansion and contraction resulting in separation between boards or damage caused by low or excessive humidity.
- o) Floors that are installed in other than owner-occupied or tenant-occupied residences.
- p) Commercial installation of residential products.
- q) Construction or installation related damage.
- r) Floors damaged or adhesive breakdown caused by sub-floor moisture or water damage, including without limitation, due to broken water pipes, flooding, wet-mopping, spills or weather conditions.
- s) Installation defects, including installations made in violation of state or local buildings codes or contrary to the written instructions furnished with the products.
- t) Special characteristics and issues relating to Brazilian Cherry/Jatoba flooring; this species of exotic flooring is sensitive to light/and or oxygen, and over time, will change color, developing a unique patina, meaning it will get darker. Silica/white areas within this flooring, under the finish are a natural occurrence and not to be considered a defect but rather are part of the species. These white areas are due in part to the mineral content of the soil in which the tree is harvested and can not be controlled and can show itself after the floor has acclimated to its installed

environment. None of these issues are covered under this warranty.

u) Any additional charges related to recoat, refinish, replacement or repair of any floor such as cleanup, moving, hotel/motel and/or residential relocation accommodations.

Homeowner and installer are responsible to inspect the flooring prior to installation. We accept no responsibility for liabilities, claims or expenses, including labor costs, where flooring with visible defects has been installed.

None of the distributors, retailers or employees has the authority to alter the obligations, limitations or exclusions under any of our warranties.

We exclude and will not be liable for or pay any incidental, consequential or special damages under our warranties. By this we mean any loss, expense, or damage other than the flooring itself that may result from a defect in the flooring. Our limited warranties constitute the only express warranties for the product purchased.

To the extent permitted by law and for all non-consumer products, all warranties other than our limited warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose, are disclaimed. If any implied warranty arises under state law, any and all implied warranties (including any warranty of merchantability and fitness for a particular purpose) are limited in duration to the duration of this written warranty, to the extent allowed by law. Some jurisdictions do not allow exclusion or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. These warranties give you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

What to do if you have any problem?

Contact the retail store from where the flooring was purchased. They can answer any questions you might have and start to process a claim if necessary. Do not contact HAWA Bamboo & Wood Products Corp.; they will be unable to accept your claim and this will only delay the process.

Please keep your sales receipt and all information regarding the claimed defect. Purchase date and proof of purchase must be provided for all claims.

1. We warrant that covered products, in their original manufactured condition, will be free from defects in grading; lamination and assembly as long as the original purchaser owns the floor.

2. Residential Use: We warrant to you, the original purchaser, that for the period indicated, 25 years, the finish on the covered product, will not wear through, and the finish will not separate from the bamboo/wood flooring under normal household use when maintained in accordance with our recommended maintenance guidelines.

3. Commercial Use: We warrant to you, the original purchaser, that for the period indicated, 3 years, the finish on the covered product, will not wear through, and the finish will not separate from the bamboo/wood flooring under normal household use when maintained in accordance with our recommended maintenance guidelines.

4. We warrant to you, the original purchaser, that the covered products may be professionally sanded and refinished if sanding and refinishing procedures are followed as specified by the National Wood Flooring Association or by NOFMA.

5. We warrant to you, the original purchaser, that for as long as you own your floor, each of our recommended adhesives, will maintain its bond when properly installed with our covered flooring products and when maintained in accordance with our recommended maintenance guidelines.

6. We warrant each of the covered engineered bamboo/wood products, when properly installed with our recommended adhesives according to our Installation Instruction Guide, including proper sub-floor moisture testing, will not release from the sub-floor for as long as you own the floor. This means that prior to installation your sub-floor must be inspected to assure your sub-floor does not exceed maximum allowable moisture levels. To ensure your warranty remains effective, keep your proof of pre-installation moisture test results. If sub-floor exceeds maximum allowable moisture levels, the sub-floor must be allowed to dry or replaced.

7. We warrant that the covered products meet our quality standards. You or your installer should carefully inspect the products before installation for any milling, dimension or visual defects. Since wood is a natural product, there will be a natural variations in color, tone and grain that are not covered by this warranty. The Pre-installation Warranty expires at the time of installation.

8. We warrant to you, the original purchaser, that the covered products, when properly installed according to our Installation Instructions Guide over radiant heated sub-floors that are engineered for the R-Rating of the wood flooring product, will not buckle as long as the finished flooring surface does not exceed 70° degrees during the life of the floor and the relative humidity levels are maintained between 35% and 65%.