Installation Guidelines

Our instructions are in line with those of the National Wood Flooring Association (NWFA) Installation methods. Please refer to the NWFA website for additional information: www.nwfa.org . Installation using the methods shown here and on the NWFA website protect your warranty.

IMPORTANT INFORMATION REGARDING THE NATURE OF WOOD FLOORING: Hardwood flooring is crafted of natural woods, which are uniquely characterized by variations in grain and color. These variations are not flaws, but part of the beauty of real wood floors. Real wood will also experience change in color over a period of time. The degree of change depends on the species and the amount of UV exposure. This is not a flaw but a distinct characteristic of real wood floors**.**

1. Responsibilities of the Installer:

- Inspect the product to ensure (a) Grade, (b) Species, (c) Quantity, (d) Size, (e) Color as ordered.
- Inspect packages for any damage in transit. (Call your carrier and wood floors if a claim must be filed.)
- Installer should have a defined method of installation based on the following:
  a. Result of testing of the slab or sub floor.
  b. Result of the testing of the atmosphere for relative humidity.
  c. The Installer or an independent agent must document all site tests.
  d. **All site test records must be available if the homeowner files a claim.**
- Installer must be aware of the buyer's expectations and inform the homeowner of wood related issues such as the following: (a) Color ranges, (b) Graining ranges, (c) Changes to be expected, (d) The effect of moisture on wood flooring, (e) The effect of UV light on exotic wood flooring.
- It is the Installer's responsibility to establish that the site is suitable and ready for the chosen method of installation, and to correct all defects prior to installation.
- The homeowner must be advised that any existing potential problems that cause product failure will not be covered under the manufacturer's warranty.
- Following the installation instruction, the Installer will do the following:
  a. Use an approved moisture barrier or underlayment.
  b. Use the appropriate nails, staples, cleats, mastic and glue.
  c. Match planks for a uniform color/grain installation.
  d. Get the homeowner's approval before proceeding with any odd matches.
  e. Remove debris and extra glue or mastic from the finish floor before the drying time indicated on the container.
  f. Floor must be protected from construction traffic during and after installation.
  g. In new construction, wood flooring should be one of the last items installed. All work involving water (plumbing, acoustical ceilings, dry wall tapings, etc.) should be completed prior to the flooring installation.
- Installer will immediately stop the installation and call the place they purchase from to report any abnormalities that are found in the delivered products. (**Installer will be responsible for sections installed despite obvious defects.**)

- The homeowner must be informed and instructed in proper floor maintenance as well as the need to maintain adequate relative humidity levels in the home at all times. (The home may require a mechanical humidity control device.)
- Jobsite checklist can be obtained from wood floors or can be found in the NWFA's technical manual #A400.

Failure to follow these instructions will immediately invalidate our warranty.

2. SUB-FLOOR PREPARATION: The sub-floor must be completely dry.

- Per the NWFA's recommendation's, the maximum generally allowable amount of moisture emissions as expressed by the calcium chloride test is 3.0 pounds per 1,000 sq. ft. per 24 hours at the time of installation.
- Another method to determine the presence of moisture in the slab is the use of an 18" x 18" 6 mil poly film taped securely to the concrete for a period of no less than 48 hours. No change should occur in the color of the concrete. Finally, the use of a heavy rubber mat lying flat to the concrete will accomplish the same results. The latter 2 methods are not accurate.
- The concrete slab will usually take from 90 to 150 days to dry thoroughly depending on the size of the slab and weather conditions.
- **Do not install Solid wood flooring if wood subfloor is reading over 12%.**
- For 3" and wider planks the floor moisture content should be within 2% of the moisture in the wood subfloor. Installation should not start until these requirements are met.
- The sub floor must be free from any type of paint, oil, greases, dust, and all other types of residues.
- The sub floor should be level in general; however, it MUST be level with-in 1/4" over a 10 foot radius, any direction.
- If plywood is used as a sub floor, the moisture content difference should be NO MORE than a 2% difference between the solid wood and the plywood. All plywood must be EXTERIOR grade CDX, and plywood size for sub floor is suggested to be no larger than ¾" by 48" x 48" and an expansion gap of no less than ¼" between sheets, and installed in an alternate pattern. (Not straight rows.)
- A suggested moisture barrier is a layer of floor tar adhesive, 15# felt, another layer of floor tar adhesive, and then the plywood. IF the plywood is being installed over a concrete sub floor, then nail the plywood to the sub floor every 1- foot along the outside edge, and the same throughout the interior.
- For more information, please refer to the NWFA Technical Service Manual "Installing Hardwood Flooring" or visit www.nwfa.org or call 1-800-422-4556.

3. ENGINEERED PRODUCTS: Glue-Down Installation

- Pre-inspect your flooring to verify the proper product and color is being installed per manufacturer's standards. Always plan for 5% defect and/or waste.
- Verify that the delivered wood flooring is between 8% - 10% moisture content and is free of defects.
- wood floors recommends 2-3 days of acclimation. However, proper moisture testing is the key to determining readiness for installation.
- Concrete slab should be tested per the instructions in "Sub Floor Preparation Instructions".
- A moisture retarder system may be required to seal the concrete when installing engineered flooring. Please see a sales associate the place of purchase for recommended moisture barrier..

- If the sub floor is raised (i.e.: wood sub floor) a moisture barrier may not be required. (Check for moisture)
- wood floors products should be installed with urethane-based adhesives.
- Read the glue manufacturer's instructions, which is printed in detail on the glue container along with the proper trowel recommendations.
- Snap a working line parallel to the starting wall, in multiples of our engineered plank width, PLUS an expansion space of ¾", to set up the baseline of installation. (Be careful to assure you do NOT end up with a width of less than 2 inches at the final opposing wall. If so, adjust by ripping down the length of the first row.)
- Follow the spread rate, and the curing time, spread the glue evenly on the sub floor to cover the area the installer can lay the planks in proper time for best results of the glue.
- Lay one row along the entire length of the work line. Add each additional row of flooring, watching the pattern repeat and offsetting or staggering the joints at least 6 inches.
- Roll the floor with a 150# roller after installation.
- Engineered products can also be nailed (barbed or ring nail), or stapled with minimum of: ¼" crown x 1- ½" length, coated. Simply adjust gun to compensate for thickness.
- For more information, please refer to the NWFA Technical Service Manual "Installing Hardwood Flooring" or visit www.nwfa.org or call 1-800-422-4556.

4. ENGINEERED PRODUCTS: Floating Installation

- **Underlayment:** Underlayment is required for a floating floor installation. Underlayment quality is very critical to a floating installation. Excessive pad compression is a common cause of seam failure.
- Lay the underlayment on the floor with the moisture barrier facing up. The direction of the underlayment should be parallel to the direction of the floor being installed.
- For the first row of flooring the underlayment should be placed so that approximately 1 inch overlaps onto all perpendicular walls. Place the following row next to the first row on top of the lower moisture barrier overlap. Remove the adhesive strip and fold back the upper overlap on the second row. Make sure the underlayment fits together tightly (don't leave gaps). On the last row, place the underlayment 1 inch up the wall. To join rolls on the short side of the underlayment, use a moisture resistant tape to connect the two pieces so water cannot penetrate the underlayment.
- **Expansion Space:** An expansion space of at least 3/8 inch must be maintained around the perimeter of the room, all pipes, counters, cabinets, fireplace hearths, doorframes and any other fixed vertical objects in the room. Doorway or archways 48 inches or less and rooms larger than a 26 x 33 are required to have a T-molding.
- **Glue and Glue Placement:** Use and approved Tongue & Groove adhesive from your place of purchase. The glue must be placed on every plank along the topside of the groove and bottom side of the tongue for the full length of the side and end. Apply only a 3/32-inch bead of glue; if the groove is filled with glue it will be difficult to close the seam not allowing a tight fit.
- **Getting Started:** The installation begins with three rows of flooring glued together and held in place with low adhesion delicate surface painters tape with the groove side facing the wall. Spacers must be used to establish the minimum 3/8" expansion space from the walls. These three rows must be straight, square and in rack because they establish the alignment of the rest of the floor. After putting these three rows together, allow the glue to set (15 to 45 minutes) before proceeding with the installation.

- With the tongue facing out, the planks can be tapped together with a tapping block on the tongue to make a snug fit. After installing 8 or 10 rows of flooring, stand back and check for crowning or heaving due to tension strapping or any damage caused by improper taping.
- **Clean As You Go:** If any glue squeezes out of the seam between the planks allow it to dry for 10 to 15 minutes and then lightly scrape it away with a plastic scraper or putty knife, any glue left may be cleaned with a damp cloth. Do not allow the glue to dry on the face of the flooring; it will be very difficult to clean off.
- **Starting Off- The First Three Rows-**
- Row One: Plank 1 should begin in the right hand corner of the room. Spacing around the wall perimeter of 3/8" can be maintained by using wood wedges. The planks are laid with the groove side facing the wall. The first row starts with a full length board; working from right to left will be required when installing T&G engineered hardwood flooring. Slide the end tongue of the board being installed into the end groove of the board you previously installed. Place each plank firmly against the wood wedges. After setting the first row and making sure you are against a firm starting point, lay out three to four rows before starting to install. Lay the rest, plank after plank, in this manner until you have completed the first row. Cut the last plank accordingly. Ensure that this first row is straight using the wedges to maintain proper 3/8" expansion space from the wall. Planks may require scribing and cutting to fit wall curvature if present.

  Row Two: When possible use leftover plank from the first row to begin the second row. The leftover piece from the first row should be considered for this starter piece to minimize waste. Initial layout of material will allow you to check your end seams to ensure they are not too close. End joints on adjoining rows should be offset by no less than 6". Align this plank and lock the side into place against the first plank in row 1. The next plank is aligned with the end joint first into the previous plank in row 2. The side of the plank is then tapped lightly against the previously laid row. Continue laying in this way across the entire row. Remove the fitting wedge and press in the row of planks with a light pressure on the long side. A Tapping Block may be required to ensure a tight fit of all long-side joints. The planks are now laid row after row in this sequence.

  Row Three and Remaining Rows: Move rows if necessary to ensure that you are not showing any undesirable joint patterns. The rest of the row's end joints should be random throughout the floor. The first three rows are staggered ensuring that offset of previous row with end joints are no closer than 6" from one another. When the planks are being placed a non-random pyramid or stair step pattern is used to ensure the planks remain engaged through the force of the tapping. Stretch and stick low adhesion delicate surface painters tape across every 3 to 5 rows of planks approximately 2' apart from each other to hold the floor in place until the glue sets. Remove tape within 24 hours.
- **Installer's Responsibility:** Warranty for separation of planks and damage caused by the use of incorrect tape or length of time tape was allowed to remain on the floor is the responsibility of the installer.

5. SOLID WOOD PRODUCTS: Nail-Down Installation

- Solid wood floors must be properly acclimated to the environment they are going to live in. Please refer to exhibit A for proper acclimation method. Acclimation is established by proper testing, rather than an exact time frame.
- Per the NWFA Installation Instruction, the structure should be fully enclosed and interior climate control operating for at least 48 hours to stabilize the moisture conditions of the interior.

- Wood delivered to the jobsite should be removed from the packaging, set in the room and spread over the sub floor before installation. Moisture content of both the flooring and sub floor should be **checked** and **recorded** before any work begins.
- Wood flooring performs best with a relative humidity range of between 30 to 50 percent and a temperature range of 60 to 80 degrees. (Humidity and Temperature control systems is needed.)
- **A near occupied environment should be established for at least five days before any moisture tests are performed.**
- These environmental conditions associated with occupancy must be maintained throughout testing, installation of flooring, and post installation until actual occupancy.
- Snap a working line parallel to the starting wall, in multiples of our solid wood flooring width, **PLUS** an expansion space of 3/4" minimum, to set up the baseline of installation. (Be careful to assure you do NOT end up with a width of less than 2 inches at the final opposing wall. If so, adjust by ripping down the length of the first row.) Install the first row with the groove side towards the wall using top nails as necessary to hold the first row firm and in place. Adjust as necessary. If any nails are visible, counter sink, and fill accordingly.
- Use adjustable pneumatic power hammer or nailing machine with 1-1/2" or 2" nails as required by the tool. Nailing pattern should be no less than 1" from the end, and every 8"- 10" thereafter. Each row MUST be nailed. Staples with a minimum of ¾" crown and 1-1/2" in length, or more, and coated or are authorized.
- Add and adjust each additional row of wood planks, to offset or stagger the end joints at least 6" to prevent repeating the pattern.
- A separation of no less than 6" is required for end joints in adjoining rows.
- A minimum 3/4" expansion space is required at all vertical obstructions.
- For more information, please refer to the NWFA Technical Service Manual "Installing Hardwood Flooring" or visit www.nwfa.org or call 1-800-422-4556.

6. SOLID WOOD PRODUCTS: Glue-Down Installation

Nail-Down Installation is our recommended installation method for wood floors. However, **adhesive application is optional** in recognition of the fact that many adhesive manufacturers now offer adhesives supported by warranties for glue-down installation of solid wood flooring. For glue- down installations, wood floors stipulates these installations must be in strict accordance with the adhesive manufacturer's installation instructions as listed on products expressly approved for solid hardwood flooring. The primary challenge with bonding solid wood flooring is dealing with the natural character of wood. Some planks will have slight bows and dips which may be difficult to compensate for when using adhesives alone. Resulting gaps are not a manufacturer's defect. Flooring straps may be required to keep planks reasonably tight and weights may be required to ensure adequate contact with the subfloor prior to adhesive setup. As always, moisture vapor emissions from concrete must be measured and accounted for. Further, the following recommendations are outlined by the wood flooring manufacturer's association, NOFMA (www.nofma.org).

The traditional nail down application is successful for all flooring pieces, including those pieces with significant bow, crook, and twist. Even the exceptional piece can be used if modified by cutting. Further, moisture changes that affect flooring after manufacture can result in pieces that are not straight or pieces that had been slightly crooked at manufacture to become more crooked. These pieces may make up a significant percentage of the product at the jobsite and are not considered defective pieces. However, the nature of an adhesive application is that "wet" adhesive will not hold or position boards with bow, crook, or twist in the same manner that mechanical fasteners will. For this reason, pieces that are not sufficiently straight or flat may not be suitable for the direct glue-down method of installation. The installing contractor should expect some solid wood flooring pieces to be unusable in a glue-down application. Those pieces should be retained for later use in a traditional nail down installation

Exhibit A – ACCLIMATION INFORMATION

Wood flooring needs to reach a moisture content level in equilibrium with the surrounding environment in which it will be installed, at or near normal living conditions. Always account for time of year and geographic location. NOTE: Not properly acclimating wood flooring may cause excessive expansion, shrinkage, dimensional distortion or structural damage The point of acclimating wood flooring before installation is to allow the moisture content of the wood to adjust to the installation site's "normal living conditions" — that is, the temperature, humidity conditions and moisture content that will typically be experienced once the structure is occupied.

For proper acclimation, all materials need to be removed from the box and stacked in a waffle pattern to allow airflow. In addition, it is recommended that the plywood to be acclimated, if it is used as a subfloor. The materials should be acclimated at the specific location where it will be installed. Hardwood flooring must acclimate for as long as necessary to meet minimum installation requirement for moisture content. To determine the proper moisture content for installation, please use the equilibrium moisture chart provided below. Please refer to the National Wood Flooring Association's guideline for additional instructions on the required moisture content for your specific region.

7. MAINTENANCE FOR HARDWOOD FLOORING

The key to enjoying hardwood flooring is proper maintenance.

- Wood flooring performs best with a relative humidity range of between 30 to 50 percent and a temperature range of 60 to 80 degrees. (Humidity and Temperature control systems is needed). Failure to maintain the above recommended humidity and temperature range will void wood floors warranty.
- Install proper floor protectors on furniture used on hardwood floors. Protectors will allow chairs to move easily over the floor without scuffing. Clean the protectors on a regular basis to remove any grit that may have become embedded.
- Vacuum regularly. When the household carpets are vacuumed, vacuum the hardwood floors - a brush attachment works beautifully. Sweep on a daily basis or as needed, but do not use a household dust treatment (i.e.: Endust, Pledge) as this may cause the floor to become slick or dull the finish.
- To protect floors from dirt or water, place rugs at entry points to help trap grit and absorb moisture that may damage the finish. However, note that rugs with rubber bottoms or non-skid pads may leave an imprint on the floor. Natural fiber rugs are a safer choice.
- Don't Damp Mop: Use only the cleaning products designed specifically for hardwood floors.
- Pet's nails can scratch and mar wood floors. Keep dog and cat nails properly trimmed to protect your floor.
- Protect your floor against direct sunlight or any intense source of artificial lighting. Over time, intense natural and artificial light will discolor hardwood floors.
- Wipe spills immediately. Be especially attentive around sink, dishwasher, stove tops and dining rooms, which are more prone to harmful spills.