

INSTALLATION INSTRUCTIONS FOR SOLID TONGUE & GROOVE HARDWOOD FLOORING

Enclosed you will find installation instructions for the following products:

- Solid Tongue & Groove (T&G) Hardwood

ATTENTION! READ BEFORE INSTALLING!

COLOR VARIATION

This flooring is a natural product and color variations are to be expected. For best visual effect, shuffle planks from several cartons and do not install boards varying greatly in color next to one another.

Dry rack the material with 3-4 cartons and make sure that the homeowner/end user approves the material before installing the floor. Once a floor is installed is it deemed acceptable and will not be warranted for any color variation, texture, gloss, finish claims. Always install the floor when the homeowner/end user is present.

ACCLIMATION

As relative humidity varies in different parts of the country, acclimation of the flooring prior to installation is the most important precaution to take in order to insure a successful installation. Proper acclimation is necessary to adapt the moisture content of the flooring to the conditions of your environment. Improper acclimation can cause the floor to buckle and/or the boards to shrink or cup after installation.

SUBFLOOR PREPARATION

Subfloor must be level, dry and free of imperfections. An uneven subfloor will make the floor feel unstable and cause premature damage.

READ THESE INSTRUCTIONS THOROUGHLY BEFORE BEGINNING INSTALLATION. IN ADDITION TO THESE INSTRUCTIONS, WE RECOMMEND THAT THE INSTALLER FOLLOW ALL INSTALLATION GUIDELINES AS SET FORTH BY THE NATIONAL WOOD FLOORING ASSOCIATION.

FLOORING MATERIAL SHOULD BE INSPECTED PRIOR TO INSTALLATION
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Responsibility for the suitability of manufacturing flooring and accompanying products for each individual installation cannot be assumed by Manufacturer, since Manufacturer has no control over the installer's proper application. Should an individual plank be doubtful as to appearance or dimension the installer should not use this piece. MANUFACTURER will send replacement in a timely fashion.

PRE-INSTALLATION JOBSITE REQUIREMENTS

Manufacturer cannot be held responsible for site conditions.

Carefully examine the flooring prior to installation for grade, color, finish and quality. Ensure adequate lighting for proper inspection. If flooring is not acceptable, contact your supplier immediately and arrange for replacement. Manufacturer cannot accept responsibility

for flooring installed with visible defects. Prior to installation of any flooring, the installer must ensure that the jobsite and subfloor meet the requirements of these instructions. Manufacturer is not responsible for flooring failure resulting from unsatisfactory jobsite and/or subfloor conditions.

Flooring should be one of the last items installed in any new construction or remodel project. All work involving water or moisture should be completed before flooring installation. Water and wood do not mix. Installing flooring onto a wet subfloor will most likely cause cupping, tip & edge raising, telegraphing of core and subsequent gapping.

Room temperature and humidity of installation area should be consistent with normal, year-round living conditions for at least one week before installation of flooring. Optimum room temperature of 70 °F and a humidity range of 30-50% is recommended during installation. Humidity levels below 30% will most likely cause movement in the flooring, including gapping between pieces and possible cupping and checking in the face.

Store the flooring in the installation area for 72 hours before installation to allow flooring to adjust to room temperature. Do not store the boxes of flooring directly on concrete. These floors need adequate acclimation for moisture equalization prior to installation. Shuffle the boards for best visual mix of lengths and color.

PRE-INSTALLATION SUBFLOOR REQUIREMENTS

All subfloors must be:

- Dry and will remain dry: Subfloor must remain dry year-round. Moisture content of wood sub floors must not exceed 11%. Concrete must be tested for moisture content using the Anhydrous Calcium Chloride test method, a non-invasive moisture meter, or a pin/probe moisture meter.
- Structurally sound
- Clean: Thoroughly swept and free of all debris (If being glued down, subfloor must be free of wax, grease, paint, sealers, & old adhesives etc., which can be removed by sanding)
- Level: Flat to 3/16" per 10-foot radius

Wood subfloors must be dry and well secured. Screw every 6" along joists to avoid squeaking. If not level, sand down high spots and fill low spots with a Portland Based leveling patch.

Concrete subfloors must be fully cured, at least 60 days old, and should have minimum 6-mil polyfilm between concrete and ground. Subfloor should be flat and level within 3/16" per 10' radius. If necessary grind high spots down and level low spots with a Portland leveling compound.

All concrete should be tested for moisture prior to installation using the Anhydrous Calcium Chloride test method, a non-invasive moisture meter, or a pin/probe meter. When using a Calcium Chloride Test, the result must not exceed 3 lbs per 1000 sq. ft. in a 24 hour period. A moisture test must be performed to ensure that the concrete slab is dry. Remember, a concrete slab on/below grade that measures dry today may become moist in the

future due to rising groundwater. Installing a moisture barrier now may be viewed as an insurance policy against concrete becoming wet in the future. Manufacturer is not responsible for site related moisture issues.

For additional protection, you may want to consider applying moisture barrier compound system.

INSTALLATION TOOLS

For all installation methods:

- Tape measure
- Tapping block (trimmed piece of flooring)
- Pencil
- Pry bar or pull bar
- Chalk line
- Wood or plastic spacers (3/4")
- Crosscut power saw
- 3M Blue Tape (DO NOT ADHERE TO OIL FINISHED FLOORS)

For nail-down installation of solid hardwood you will also need:

- Air stapler/nailer compatible with profile of the flooring material
- 1 ½" – 2" nail, cleat, or staple that is compatible with the profile of the flooring material
- Air compressor

Acceptable subfloor types:

- CDX Underlayment Grade Plywood (at least ½" thick)
- Underlayment grade particleboard (floating/glue-down only)
- Concrete slab (floating/glue-down only)
- Existing wood floor
- Ceramic tile (floating/glue-down only)
- Resilient tile & sheet vinyl (floating/glue-down only)

STARTING YOUR INSTALLATION

Make sure subfloor is tested for moisture first and is properly prepared.

Since natural flooring expands with any increase in moisture content, always leave at least a 3/4" expansion space between flooring and all walls and any other permanent vertical obstructions, (such as pipes and cabinets). This space will be covered up once you reapply base moldings around the room. Use wood or plastic spacers during installation to maintain this 3/4" expansion space.

Work from several open boxes of flooring and "dry lay" the floor before permanently laying the floor. This will allow you to select the varying grains & colors and to arrange them in a harmonious pattern. It also allows you the opportunity to select out very dark/light pieces for use in hidden areas in order to create a more uniform floor. Remember, it is the installers' responsibility to determine the expectations of what the finished floor will look like with the end user first and then to cull out pieces that do not meet those expectations.

Begin installation next to an outside wall. This is usually the straightest and best reference for establishing a straight working line. Establish this line by measuring an equal distance from the wall at both ends and snapping a chalk line. The distance you measure from the wall should be the width of a plank plus about 3/4" for expansion space. You may need to scribe cut the first row of planks

to match the wall in order to make a straight working line if the wall is out of straight.

You may want to dry lay a few rows, (no glue or nails), before starting installation to confirm your layout decision and working line. When laying flooring, stagger end joints from row to row by at least 8". When cutting the last plank in a row to fit, you can use the cut-off end to begin the next row. If cut-off end is 8" in length or less, discard it and instead cut a new plank at a random length and use it to start the next row. Always begin each row from the same side of the room. To draw planks together, always use a tapping block (a short piece of flooring), as tapping the flooring itself will result in edge damage. For best results, flip the tapping block upside down and use the groove edge to tap the tongue edge of the plank being installed. Fit end joints tightly together before tapping long edges together. When near a wall, you can use a pry bar to pry close the side and end joints. Take care not to damage edge of flooring. **DO NOT ADHERE TAPE OF ANY KIND TO OIL FINISHED FLOORS.**

INSTALLATION FOR SOLID HARDWOOD FLOORS NOMINAL 5" WIDE AND GREATER

Before you begin using the following instructions, please refer to the Pre-Installation Job Prep information above.

NOTE: Our products are not warranted against squeaking, popping or crackling when using staple-down or nail-down installation methods. Some squeaking, popping or crackling is normal and possible when using staple-down or nail-down installation methods. These symptoms may be aggravated in arid areas or during dry conditions.

Set Up and Use of Pneumatic Staplers and Nailers:

Minor occasional noises within the flooring are inherent to all staple/nail-down installations and can change as environmental changes occur. This is not a manufacturing defect and is therefore not covered under our warranties. You can help reduce squeaking, popping, and crackling by being sure that the subfloor is structurally sound, does not have any loose decking or joists, and is swept clean prior to installation. You should also be sure that your stapler or nailer is setting the fastener properly, not damaging the planks, and that you are using the correct nailing schedule. When used improperly, staples or cleats can damage wood flooring. If the tool is not adjusted properly the staples/cleats may not be positioned at the proper angle and cause blistering, peaking, squeaking, or crackling of the floor. Some models may require the use of an adapter to adjust for proper thickness. Test the tool on a piece of scrap material first - set the stapler/ nailer flush on the tongue side of the plank and install a staple/cleat.

Be sure not to over-drive the fastener past the nail slot, this can lead to a condition known as a telegraphing fastener. A telegraphing fastener is the visible effect of excessive pressure being placed on the wood fibers which causes the appearance of a bump to occur just above the fasteners. This condition becomes most apparent when natural or artificial light reflects across the surface of the floor causing the bump to become visible to the eye. This condition can sometimes be difficult to see, so make sure to thoroughly examine the first few rows of flooring to make certain telegraphing does not exist. The manufacturer does not warrant against this condition since telegraphing fasteners are not manufacturing related. If you should encounter this condition immediately stop the installation and contact your local distributor or

manufacturer of the nailer for technical advice. It is essential that the flooring installer make sure that the nailer/stapler is properly adjusted for the particular floor that is being installed i.e. the fastener(s) MUST enter the nail slot at the correct angle and height, do not over-drive the fastener(s) so as not to cause damage to the board e.g. telegraphing fasteners, broken or split tongues, peaking, squeaking, or crackling noises to occur.

All wide plank solid floors nominal 5" wide and greater are required to be installed with glue assist if nailing or stapling.



Glue Assisted Installation: You must account for moisture in any installation. In the event the subfloor is not within acceptable moisture tolerance range. Two suggested ways to provide a moisture vapor retarder is to install an underlayment paper. Cut a ½" channel, in the paper perpendicular to the direction of the floor to be laid, every 12" on center. A second option is to roll on a coat of moisture barrier over the entire subfloor to create a moisture retarder. During installation of the wood you can then run a minimum ¼" bead of approved adhesive (ie Bostik's Best in a caulking tube) every 12" on center perpendicular to the direction of the wood. Use a normal nailing pattern for the dimensions of the wood installed per NWFA installation procedures.

During installation of the wood you can then run a minimum ¼" bead of approved adhesive (ie Bostik's Best in a caulking tube) every 12" on center perpendicular to the direction of the wood. Use a normal nailing pattern for the dimensions of the wood installed per NWFA installation procedures.

Part I: Acceptable Jobsite Conditions and Jobsite Checklist

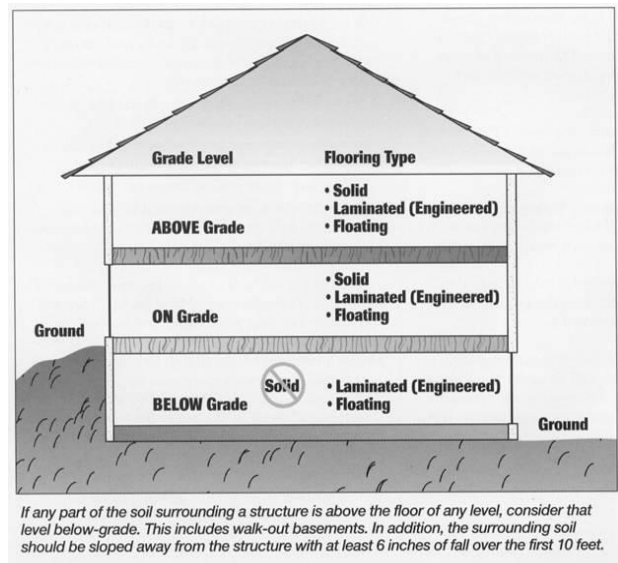
A. Refer to NWFA Installation Guidelines Chapter 1, Jobsite Conditions.

Part II: Acclimation Guidelines

A. Refer to NWFA Installation Guidelines Chapter 2, Acclimation and Conditioning of Wood Flooring.

Part III: Appropriate Grade Levels

A. Solid wood floors can be installed successfully on or above grade level. Not below grade.
 B. The entire flooring level is considered to be below grade where soil is present along any perimeter wall and is more than 3" above the installed wood flooring level. Ground should be sloped away from the house for proper drainage. (Check local building codes. Local building codes prevail. Follow local building codes.)



Part IV: Subfloors – Wood Joist Systems

A. Refer to NWFA Installation Guidelines Chapter 4, Wood Subfloor Guidelines.

Part V: Subfloors – Concrete Slab

A. Refer to NWFA Installation Guidelines Chapters 5, Concrete Subfloor Guidelines, and Chapter 6, Installing a Subfloor Over Concrete.

NAIL DOWN INSTALLATION FOR SOLID HARDWOOD

NOTE: Our products are not warranted against squeaking, popping or crackling when using staple-down or nail-down installation methods. Some squeaking, popping or crackling is normal and possible when using staple-down or nail-down installation methods. These symptoms may be aggravated in arid areas or during dry conditions.

Make sure subfloor is tested for moisture content first and is properly prepared. Use an air stapler/nailer compatible with profile of flooring material (or) a stapler/nailer of your choice. Test on a sample to make sure that stapling/nailing will not cause dimpling (localized raised edges) in the finished floor. **(Note: be sure to look at the face of the installed flooring at a low angle from a distance to see if dimpling is occurring as it is hard to see when directly above the floor.)** If dimpling does occur, STOP and adjust the stapler/nailer shoe and angle/place of staple entry in order to avoid it. **Manufacturer is not responsible for dimpling.**

For the first and second starting rows: lay first plank inside chalk line with grooved edge toward wall. Install entire first row in the same manner. Always leave at least a 3/4" expansion space between flooring and all walls and vertical objects (such as pipes and cabinets). Use wood or plastic spacers during installation to maintain this expansion space. In order to affix the first rows, as it is difficult to get the nail gun in place next to the wall, you may wish to set these rows in mastic and glue them down rather than face nailing them and leaving unsightly nail holes which must be filled with putty to match the wood floor.

After gluing down these starting rows with manufacturer's recommended adhesive, set weight on top of these rows and allow them to set before commencing stapling/nailing

the additional rows, as nailing the adjacent rows may cause the starting rows to subsequently move. Make sure the starting rows are straight and drawn tight. Subsequent rows: Lay by using floor nailer/stapler to blind-nail top inside edge of tongue at a 45 degree angle. Nail each board every 8" and within 2" of each end. Remember to stagger end joints from row to row at least 8" apart and use a tapping block to fit boards together. It may be necessary to face-nail in doorways or tight areas where the nailer/stapler can't fit, (or glue down in these areas and weight them while the mastic sets). The last two rows will need to be face-nailed, (or glued down), in the same manner as the first two rows. Always make sure to visually check the installed floor as you go to ensure that the stapling/nailing is not causing dimpling on the face. **(Note: be sure to look at the face of the installed flooring at a low angle from a distance to see if dimpling is occurring as it is hard to see when directly above the floor.)** If dimpling does occur, STOP and adjust the stapler/nailer shoe and angle/place of staple entry in order to avoid it. Manufacturer is not responsible for dimpling.

AFTER INSTALLATION

- Flooring should be one of the last items installed in a project. In order to protect the floors while other trades are finishing their work prior to final cleanup and turnover to the owner, use rosin paper. DO NOT use Blue Tape to adhere to the floor (blue tapes may damage the finish). Clean the floor thoroughly before laying the rosin paper to ensure that no debris is trapped underneath. DO NOT USE plastic film or other non-breathing coverings as this can cause the floor to become damaged from humidity buildups.
- Remove expansion spacers and reinstall base and/or quarter round moldings to cover moldings to cover the expansion space.
- Dust mop or vacuum your floor to remove any dirt or debris.
- Install any transition pieces that may be needed (reducers, T-moldings, nosing, etc.).
- If using glue-down method, do not allow foot traffic or heavy furniture on floor for 24 hours

PROTECTION AND MAINTENANCE OF YOUR FLOOR

Lasting beauty can be achieved through purchasing a quality floor covering and providing proper on-going maintenance.

Fading: Natural floors contain organic pigments and are subject to fading when exposed to direct sunlight. Where possible, use drapes or other systems to protect your floor from excessive light.

Joints: Natural flooring reacts to the conditions in the environment. Natural flooring plank systems expand and contract in response to fluctuations in temperature and humidity. Controlling the environment, maintaining an adequate temperature and relative humidity will minimize the visible effects of normal contraction and expansion. Optimum recommended temperature is 70°F and relative humidity is 30% - 50%. *In very dry climates, the use of a humidifier might be necessary.*

Photosensitivity: Hardwood floors are photosensitive and will change color as they age or are exposed to U.V. light. In some species the natural pigmentation will be lost and

can develop a "bleached" appearance. In many exotic hardwood species (i.e. Tigerwood), the flooring develops a rich patina that will darken the appearance and enhance the natural beauty of the material.

As this is a natural occurring phenomenon, accelerated with exposure to U.V. light, it is not considered a material defect and is excluded from coverage under the provisions of Manufacturer's Limited Warranty.

Tips to Minimize Fading/Discoloration

- Avoid rubber-backed mats and rugs, as the backing may discolor your floor.
- Change the location of your rugs periodically. Rearrange more frequently if they are placed in front of doors and windows.
- Use light filtering window treatments (i.e. blinds, drapes, window film) that will help prevent sunlight exposure.
- Rearrange furniture seasonally to allow the flooring to darken and age uniformly.

If completing a flooring extension or board replacement after the original installation has been down for a period of time, the new flooring will have a lighter appearance. As the material is exposed to natural light, it should eventually blend in with the surrounding areas.

However, due to the age of your flooring, surface wear (and/or) exposure to U.V. light, Manufacturer cannot guarantee replacement flooring will be a 100% match to your existing product.

Remember that color variation is to be expected with natural products. However, should an individual plank be doubtful as to appearance or dimension the installer should not use this piece.

- **Follow the instructions on this installation guide as well as the guidelines listed out by the NWFA.**
- **For further detailed installation guideline, please refer to NWFA (www.nwfa.org)**