## ENGINEERED TONGUE & GROOVE INSTALLATION INSTRUCTIONS
## 3/8", 1/2", 9/16", 3/4"
## Float-In / Glue-Down / Nail / Staple Down

### Important / Read First

Please read and review installation instructions completely before proceeding with the installation. We recommend the installer follow all guidelines set forth by the National Wood Flooring Association (www.nwfa.org)for job site, subfloor and general installation recommendations.

Engineered hardwood flooring can be installed on all grade levels; on grade, above grade and below grade. This includes installation directly to concrete, terrazzo and wood sub floors, or over existing ceramic tile, wood and vinyl floors, with proper preparation.

### Installer/Owner Responsibility

It is the responsibility of the owner/installer to inspect the flooring. It is also the owner/installer's responsibility to ensure the jobsite conditions, plus the jobsite sub floors are environmentally and structurally acceptable prior to the beginning of installation.

Prior to installation, **the owner and or installer are responsible for the final inspection of materials and is encouraged to report any deficiencies in grade, manufacture and finish directly to the seller.** Should an individual piece be questionable or not meet standards, it should not be used. **Materials installed with visible defects will not be covered by the warranty.**

The owner and/or installer are responsible for ensuring that the proper installation conditions and appropriate sub floors meet or exceed all NWFA industry standards. Proper installation can be affected by adverse moisture content in the product, humidity at the job site, acclimation of flooring to local site conditions, preparation of job site, preparation of sub floor, and flooring layout. The sub floor must be clean, flat, dry and structurally sound.

We recommend ordering 5% above the actual square footage requirements to allow for cutting and grading of material.

Due to inherent variations with wood flooring product the installer must work out 4-5 cartons simultaneously to ensure proper blending across the floor.

**New Construction:** New construction adds a variety of challenging variables to wood flooring installation. Sub floor moisture content and RH in the home must meet the requirements as specified in these instructions. **Prior to installing the installer is responsible to take moisture reading of sub floor with a meter that is appropriate for the sub floor type, RH readings in the home and maintain the records showing proof of all readings for product warranty to apply.** If flooring is stored on the job site prior to installation the environmental conditions in the home must be dry, RH of 35%-60% with HVAC running at least 14 days prior to bringing the wood flooring to the job site.

**RADIANT HEAT**

**EXCEPT FOR 2mm HICKORY SELECTIONS, this flooring is warranted for installation over hydronic radiant heat if installed per these instructions. However, flooring is not warranted over electric radiant heat systems. Only hydronic systems are approved. Please carefully read the "Radiant Heat" section below before finalizing product selections.**

- When installing engineered wood flooring over radiant heat, follow all directions in addition to the directions below.
- Flooring is not warranted for use over radiant heat systems heated by electric elements. Only hydronic systems are approved. Hydronic systems must include infloor temperature sensors and a wall thermostat that allows the system to adjust the water temperature according to anticipated heat loss. Flooring installed in multiunit projects where the water temperature is not regulated separately in each unit is not warranted.
- Prior to installation over radiant heat moisture testing must be conducted and documented per ASTM 1869-89 (Calcium Chloride Test) or, for wood subfloors, using a pin type meter. The moisture content for concrete subfloors must not exceed 2.0 lbs. per 1000 square feet per ASTM 1869-89 (Calcium Chloride Test), and the moisture content for wood subfloors must not exceed 12%. If moisture levels exceed these limits, do not install the flooring.
- The surface temperature of the subfloor must never exceed 82°F in any location. The temperature setting must always remain within 15°F of normal operating level, and should never be turned completely off. Excessive heat, rapid heating, and/or failure to maintain humidity levels between 30% and 60% are likely to cause cracking, cupping and other forms of floor failure. Slight surface checking (cracking), particularly at the ends of planks, should be expected in installations over radiant heat and do not constitute a product failure.
- All concrete must be allowed to properly cure and dry for a minimum of 4 weeks prior to the operation of the radiant heat system. The system should then be operated at least 2/3 maximum output for a minimum of 2 weeks prior to installation of flooring to further allow moisture from the subfloor to dissipate and reach equilibrium. This procedure must be followed regardless of the time of year. Four (4) days prior to flooring installation, reduce thermostat to 65°F.
- As always, relative humidity of the jobsite must be maintained between 30% and 60%. Use of a humidification/dehumidification system may be required to maintain the proper humidity levels, particularly over radiant heat. Failure to maintain proper humidity levels will void all warranties.
- Beginning 48 hours after installation, slowly raise the temperature of the heating system to its preferred operating level over a period of 5 days.

### Proper Site Conditions & Handling

1. The building must be complete & enclosed. It is essential that masonry, dry wall, paint and all other 'wet' work to be completed, given time to thoroughly dry as this will affect the moisture content of the job site.
2. The exterior grading should be complete with all gutters, downspouts and drainage directed away from the building. The crawl space must have adequate cross ventilation (equaling 1.5% of the, on grade, total sq ft) and a vapor barrier of 6-8 mil polyethylene film (covering 100% of the crawl space), joints overlapped and taped. There must also be a minimum of 24" from the ground to the underside of the joists.
3. Permanent HVAC systems must be working and in operation 14 days prior to installation to stabilize the interior environment at normal living conditions and to acclimate the flooring. The HVAC must also be in operation during and after the installation to ensure a stable environment to protect the hardwood floor. Ideal conditions are a temperature between 60-80 degrees Fahrenheit (15-26 degrees Celsius) and relative humidity between 35-55% at all times during and after installation. The use of a humidifier or dehumidifier may be required to maintain these conditions.
4. Engineered wood flooring can be installed on, below and or above grade level, but should not be installed in full bathrooms or other wet environments.
5. Take special care when transporting & unloading hardwood flooring at the job site. Store the hardwood flooring in a safe dry place making sure to provide a 4" air space under cartons that are stored upon "on-grade" concrete floors. Flooring should be stored in small lots in the rooms where the installation will take place and allowed to properly acclimate/condition to the job environment.
6. Flooring should be allowed to acclimate for a minimum of 24 hours or until conditions are at normal living conditions and meet minimum installation requirements for moisture content. Store the wood flooring in the unopened boxes at installation area. Do not store the boxes of flooring directly on concrete or close to a wall. DO NOT OPEN more than a few boxes in advance of installation and only the number of boxes that will be installed within the next few hours. Only open enough boxes to ensure a good mix of lengths and color.
7. Moisture content should be checked with the appropriate device to ensure proper installation conditions. Moisture content of wood sub floor should not exceed 9% and the moisture content of the wood should be within 2% of the sub floor.
8. Concrete sub floors must be fully cured for a minimum of 60 days and dry (3lbs or less/24 hrs/1,000 sq. ft., with a calcium chloride test) or less than 75% with relative humidity probes (in-situ testing)
9. Ensure exterior landscaping is complete and graded away from the foundation. Gutters and downspouts must be in place directing rain water away. Always store wood flooring in a controlled environment of 60 - 80° Fahrenheit (15° - 26° Celsius) and 30% - 60% relative humidity.

### Sub Floor Types & Requirements

Preferred Plywood Sub Floor: Use 4' x 8' sheets of 5/8 CDX grade Ply-wood underlayment. Alternate: High grade, quality 23/32" OSB underlayment with joist spacing 16" on center or 19.2" on center with floor truss system. If joists are spaced over 16" on center or floor truss system over 19.2" on center, an additional layer of 1/2" CDX laid diagonal or perpendicular with 1/8" spacing will be required between sheets of underlay. Particle board is not an approved subfloor for nail down or glue down applications. **OSB must be a high grade with heavy concentration of adhesive if installation is nail or staple down. Installer must verify fastener strength when using OSB or plywood.**

* Minimum specified materials at maximum span and spacing may result in movement, gaps, and noises.

**Solid Board Sub flooring:** Should be 3/4"x 5 1/2" Group 1 dense soft- woods, No.2 Common, Kiln dried less than 15% MC.

Concrete: Engineered Hardwood Floors can be laid on concrete provided an appropriate sub floor and moisture barriers are installed over concrete.

1. Make sure concrete is flat, dry, structurally sound and clean.
2. Floor should be flat to 3/16" within an 8' radius .
3. Substrate should be flattened to tolerance.
4. Always use a 6 mil poly moisture barrier when installing over concrete (Floating installation).
5. If a concrete sub floor is lightweight (less than 100 lb) rule of thumb: Draw a nail across the top of concrete and if it leaves an indentation, it is probably lightweight concrete and cannot be installed using the glue down method. With light weight concrete you must float the wood flooring.

**Moisture testing for material and wood subfloors:**
Using a pin-style meter, test wood for moisture content. Wood should be between 6% - 9% moisture content prior to installation. The subfloor should be within 2% difference of the hardwood, with the moisture content of the subfloor not to exceed 11%.

Crawl spaces must be cross-ventilated (1.5% of the total sq. ft.). 6-8 mil black poly covering 100% of the ground and a minimum of 24" from the ground to the bottom of the joists.

**Test concrete for moisture using one of the following methods:**
**Calcium chloride test:** Follow test manufacturer's directions, performing 3 tests for the first 1,000 s/f and one additional test for every subsequent 1,000 s/f. Moisture emission rate should not exceed 3 lbs per 1,000 s/f.

**Insitu test:** Relative humidity probes should read 75% relative humidity or less in all areas.

**For further information on moisture testing, follow the guidelines published by the National Wood Flooring Association, www.nwfa.org.**

## Additional Sub Floor Notes

Sub floor surface must be clean, level (flat to 3/16" in 8' radius), structurally sound, and dry. Manufacturer will not be responsible for any product failure due to poor sub floor conditions or materials. Unsound or damaged sections should be repaired or replaced.

Sub floor surface should be scraped or sanded clean and made flat prior to installation. The surface must also be free of any wax, dirt, paint, oil, grease, sealers, curing compounds and other debris. Sand or grind high spots and fill low spots with an approved floor patch compound.

It is very important to nail or screw any area of loose or moving sub floor that will cause squeaks. Manufacturer recommends the use of nails or screws with panels fastened every 12 inches along the joists or intermediate supports to ensure soundness of floor when complete.

## Sub Floor Inspection and Room Preparation

Sub floor must be completely dry. If installing over new concrete slab, allow 60 days or more to dry thoroughly. The installer must test the concrete using recommended testing methods and levels.

Sub floor must be free of any paint, oil, greases, dirt, sealers, curing agents, dust and other residues.

If installing on any wood sub floor, the moisture content difference between engineered wood floor and wood sub flooring should not be more than 2%.

If installing over existing vinyl floor, make sure vinyl is free of waxes, polishes, and is secured to the sub floor and that the underlying sub floor meets sub floor conditions.

Screw down all creaking and loose sub flooring.

Remove doors and existing baseboards, quarter rounds and thresholds.

Door frames and other wooden obstacles should be sawed off at the bottom to allow enough room for the underlayment and planks to slide under.

## General Installation Requirements

All wet trades such as tiling, drywall, painting etc. must be completed before hardwood is installed or delivered to the site.

1. Evaluate job-site and sub floor condition to ensure proper installation environment.
2. Read the product instructions thoroughly.
3. The completed floor is only as good as the sub floor, and the installer.
4. Allow for an expansion space equal to the thickness of the floor (i.e. 3/8" or 1/2") around all vertical obstructions.
5. Should a piece be doubtful due to manufacturing, color, finishing, grade or having a visual defect, do not install it. Cut it for the wall line or place it in a closet. Work out of multiple cartons for a random appearance.
6. **No area of connected floor can span greater than 30' in width or 30' in length without allowing for additional expansion space beyond the standard 3/8" to ½". For larger spans when the installation is floated install T-Moldings or other transition pieces. For larger spans for glue down add an extra 1/16" for every 3' to the standard 3/8" to ½" expansion allowance. Installations larger than 48' require T-Molds or other transition pieces in addition to the extra spacing. More or less spacing may be needed depending on geographical area.**
7. **Starter Boards:** Each carton of flooring will have up to 2 pieces that can be used to start or end a row. One end is cut straight and does not have a profile. Use these boards during installation.

Never strike the floor with a hammer or mallet as this may damage the finish. In glue down and floating applications, do not use ratchet straps or tape to secure the floor.

**Note:** Minor occasional noise (such as squeaking) within the flooring is inherent to all installation hardwood flooring applications and can occur as environmental conditions change.

## Completing the Job

1. Fill visible joints and gaps with a non-silicon based filler that blends with the floor color. Helpful hint: Test filler on spare piece of plank.

**Note:** The use of fillers/putty and stain is a recommended and acceptable industry practice. Full plank replacements are also acceptable forms of repair and do not affect the integrity of the floor when done correctly

2. Install molding and trim making sure not to nail into the hardwood flooring.
3. Sweep and/or vacuum floor then clean with a hardwood flooring cleaner.

**Note:** You must stay off floor for at least 12 hours when using either floating or glue down methods.

Upon completion, cover the floor with a breathable wrapping to protect the finish if necessary.

## Asbestos Warning

Do not sand existing resilient tile, sheet flooring, backing, or felt linings as these products may contain asbestos fibers that are not easily identified. The inhalation of asbestos dust can cause asbestosis or other serious bodily harm. Check with local, state, and federal laws for handling hazardous material prior to attempting the removal of these floors.

## Wood Dust

WARNING: Wood Dust contains a chemical known to the state of California to cause cancer. Approved respirators may be needed depending upon dust conditions.

Sawing, sanding and/or machining wood products can produce wood dust, which can cause a flammable or explosive hazard. Wood dust may also lead to lung, upper respiratory tract, eye, and or skin irritation, and some species of wood may cause dermatitis and or allergic respiratory effects. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans. The National Toxicology Program (NTP) has also classified wood dust as a known human carcinogen.

- Avoid dust contact with ignition source.
- Sweep or vacuum dust for recovery or disposal.
- Avoid prolonged or repeated breathing wood dust in air.
- Approved respirators may be needed depending upon dust conditions.
- Avoid dust contact with eyes and skin. Wear Gloves and safety glasses when handling and machining the product.
- First Aid: If inhaled, remove to fresh air. If irritation persists, contact a physician.

## Tools & Accessories

Broom/Vacuum
Saws and jamb saw Hammer
Ear Plugs and Glasses
Pencil
Vapor Retarder
Tapping Block
Underlayment (Good Quality 1/8" thick closed cell)
Rubber Mallet
Tape Measure
Hard Wood Cleaner
Dust Mask
Chalk line
Proper Trowel
Moisture Meter (wood & concrete)
Galvanized finish nails!

Titebond® or other PVA Floating wood floor specified tongue and groove adhesive with Aliphatic Resin for float-in installation.

Moisture cured urethane adhesive for direct-glue installation.

**THE FLOORING INSTALLER IS RESPONSIBLE FOR DETERMINING IF THE ADHESIVE TO BE USED IS SPECIFIED FOR THE PARTICULAR PRODUCT BEING INSTALLED AND PROPER TROWEL AND SPREAD RATES PER ADHESIVE MANUFACTURERS INSTRUCTIONS.**

3/8" Products with 1mm Face Layer– Float-In or Glue Down Only
Nailer/Stapler not recommended for 3/8" products

**For ½", 9/16", ¾"**
**Flooring Nailer:**
**½"** Powernail Model 2000, 20 Gauge Nailer or similar. 1"-1 ¼" Cleat. PSI 80-85.

**9/16" - ¾"** Powernail Model 50P Flex, 18 Gauge or similar. 1½"-1¾" Cleat. PSI 80-85.

**Flooring Stapler:**
**½", 9/16"** Spotnail pneumatic stapler WS4840W6 or similar. Use 4811PN 1 ½" 18 gauge Nylon coated staples.

**¾"** Spotnail pneumatic stapler FS7550 or similar. Use 7516PG-5M-15.5, 2" length, 15.5 gauge, ½" crown staples. PSI 80-85.

**THE FLOORING INSTALLER IS RESPONSIBLE FOR DETERMINING IF THE NAILER/STAPLER TO BE USED IS SPECIFIED FOR THE PARTICULAR PRODUCT BEING INSTALLED AND IS ADJUSTED PROPERLY TO AVOID DAMAGE TO THE FLOORING. CONTACT POWERNAIL (1-800-323-1653) OR WWW.POWERNAIL.COM FOR TECHNICAL QUESTIONS AND DEALER LOCATOR. CONTACT SPOTNAIL (1-800-973-2239) OR WWW.SPOTNAIL.COM FOR TECHNICAL QUESTIONS AND DEALER LOCATOR.**

## Floating Installation

**Note:** Tongue and groove adhesive must be used in the groove full length on all joints when utilizing the floating installation method.

**Note:** Heavy objects such as counters, large stoves and refrigerators and kitchen islands should be in place prior to the installation of a floating wood floor. Compressing a floating floor against the subfloor with excessive weight will inhibit the floors' ability to move in response to changes in relative humidity and may result in gapping, cupping or squeaking.

1. Determine starting wall and direction to lay boards. An outside wall is normally best as it is most likely straight and square with the room.
2. Lay underlayment in same direction as boards using a combination of polyethylene and foam underlayment or a 2 in 1 combined product making sure to tape the seams and overlap the poly edges by 4" (do not overlap the actual foam pad). The vapor barrier must be continuous without cuts or punctures. Tape any tears, cuts and seams.
3. Begin installing the first row in the right corner of the base wall. Install the first board so the short grooved side is against the expansion shims to your right and the long grooved length of the board is against the expansion shims in front of you.
4. Maintain expansion gap equal to thickness of the floor (1/2" or 3/8") between first board and the wall by using spacers regularly along the length of the wall. Determine straightness of wall by snapping a chalk line. If starting wall is not straight, make notation on first row and saw to shape.
5. Holding the board finished side down, apply 1/12" bead of tongue and groove adhesive into the groove on the end of the second board. Connect the end of the second board to the end of the first board, making sure the boards are tightly connected and firmly positioned against the shims. Use the hammer/rubber mallet and tapping block to tap the tongue end of the second board to ensure a tight fit. **Never use the hammer or rubber mallet directly on the flooring as this will cause damage to the board.**
6. Continue placing additional boards moving right to left using the same procedure until the first row is complete.
7. You will need to cut off the end of the final board, save the remaining piece for the next row as long as it is at least 8" long. Use the last board Puller to ensure the last board is tight against the preceding board. Place shims between the end of the last board and the wall. Use the shims to wedge the row in tight rendering it immobile.
8. Start each new row on the right side with the remaining portion of the previous row as long as it is at least 8" long; otherwise cut a new starter board. Stagger end joints (at least 8") and randomly install different lengths to ensure natural appearance. Do not create discernible patterns such as "H" or "steps". Select boards to create a uniform appearance without clusters of short lengths or sections of light or dark planks. Do not install any objectionable boards that have visual defects or are not consistent with the grade being installed.
9. The end joint must be at least 8" from the end joint in the row before it. **A minimum of one end joint is required in every row, regardless of width (e.g. hallways).**
10. Holding the board finished side down, apply 1/12" bead of tongue and groove adhesive into the short end and long side grooves and position the next board, match the tongue and groove at the end only, then, beginning at the opposite end of the board, tap the board onto the previous row with the tapping block. Move the tapping block back toward the right side of the board until you get near the connections with the previous board. Before you finish tapping the board onto the previous row, you must be sure the end joint is tight. If the end joint is not completely tight you may not be able to do so once the long seam is tight.
11. Continue process across the room. The last board should be sawn to appropriate width allowing for 3/8" to 1/2" expansion space against walls and all vertical obstructions.
12. **Do not install floating floors in excess of 30 feet in length or width without the use of transitions.**
13. Use transitions at doorways and other adjacent floors.
14. Do not affix the floor to the subfloor at any point.

## Glue-Down Installation

1. Determine starting wall and direction to lay boards. An outside wall is normally best as it is most likely straight and square with the room. Wood should be installed perpendicular to the joists. In cases of existing wooden floor, boards should be laid crosswise or at a 45 degree angle.
2. Begin installing the first row in the right corner of the base wall. Install the first board so the short grooved side is against the expansion shims to your right and the long grooved length of the board is against the expansion shims in front of you.
3. Maintain expansion gap of 3/8" to 1/2" between first board and the wall by using spacers regularly along the length of the wall. Determine straightness of wall by snapping a chalk line. If starting wall is not straight, make notation on first row and saw to shape.
4. Connect the end of the second board to the end of the first board, making sure the boards are tightly connected and firmly positioned against the shims. Use the hammer/rubber mallet and tapping block to tap the tongue end of the second board to ensure a tight fit. **Never use the hammer or rubber mallet directly on the flooring as this will cause damage to the board.**
5. Continue placing additional boards moving right to left using the same procedure until the first row is complete.
6. You will need to cut off the end of the final board, save the remaining piece for the next row as long as it is at least 8" long. Use the last board Puller to ensure the last board is tight against the preceding board. Place shims between the end of the last board and the wall. Use the shims to wedge the row in tight rendering it immobile.
7. Once the first row has been cut and fit, remove the flooring and set it aside. Snap a chalk line the face width of the wood flooring plus 3/8" to 1/2" for expansion space out from the starting wall. Starting from the edge of the chalk line, apply an even layer of adhesive as instructed by the adhesive manufacturer. Only spread adhesive the width and length of the one row that was dry fit.

## A NOTE ON ADHESIVE:

Follow the adhesive manufacturer's instructions for use in this application. Wear rubber gloves and proceed carefully during adhesive application. Cured mastic is very hard and sometimes impossible to remove from the flooring as well as the tools. **DO NOT** allow any spilled or excess adhesive to remain anywhere but between the boards and the subfloor at any time during the installation. Clean up spills immediately as recommended by the adhesive manufacturer. **The flooring manufacturer will not be responsible in any way for adhesive that is not removed from the hardwood flooring immediately. Any damage to the flooring caused by the adhesive allowing to cure on the surface will be the sole responsibility of the installation mechanic. Acetone may be used to remove adhesive.**

8. Re-install the pre-cut boards from the dry fit as follows. Connect the end of the second board to the end of the first board, making sure the boards are tightly connected and firmly positioned. Use the hammer/rubber mallet and tapping block to tap the tongue end of the second board to ensure a tight fit. **Never use the hammer or rubber mallet directly on the flooring as this will cause damage to the board.**
9. Continue placing additional boards moving left to right using the same procedure until the first row is complete.
10. Place shims between the end of the last board and the wall. Use the shims to wedge the row in tight rendering it immobile. For best results, allow the adhesive to dry before continuing with the rest of the installation.
11. Start each new row on the right side with the remaining portion of the previous row as long as it is at least 8" long; otherwise cut a new starter board. Stagger end joints (at least 8") and randomly install different lengths to ensure natural appearance. Do not create discernible patterns such as "H" or "steps". Select boards to create a uniform appearance without clusters of short lengths or sections of light or dark planks. Do not install any objectionable boards that have visual defects or are not consistent with the grade being installed.
12. The end joint must be at least 8" from the end joint in the row before it. A minimum of one end joint is required in every row, regardless of width (e.g. hallways).
13. Trowel adhesive onto the subfloor as recommended by the adhesive manufacturer, place the next board in position, match the tongue and groove at the end only, then, beginning at the opposite end of the board, and tap the board onto the previous row with the tapping block. Move the tapping block back toward the right side of the board until you get near the connections with the previous board. Before you finish tapping the board onto the previous row, you must be sure the end joint is tight. If the end joint is not completely tight you will not be able to do so once the long seam is tight.
14. Continue process across the room. The last board should be sawn to appropriate width allowing for 3/8" to 1/2" expansion space against walls and all vertical obstructions. The last board puller will be used to install the last row.

## Nail / Staple Down Installation

**Note: Installer must verify fastener strength before proceeding. The quality/grade of the subfloor can negatively affect the fasteners hold strength. Issues with hold strength are not covered by flooring product warranty.**

1. Determine starting wall and direction to lay boards. An outside wall is normally best as it is most likely straight and square with the room. Wood should be installed perpendicular to the joists. In cases of existing wooden floor, boards should be laid crosswise or at a 45 degree angle.
2. Lay 30-30 Kraft or 15 lb. asphalt saturated felt (roofing felt) in same direction as boards making sure to tape the seams and overlap edges by 4". The vapor barrier must be continuous without cuts or punctures. Tape any tears, cuts or seams.
3. When nailing/stapling, add a tongue and groove adhesive into the groove of the short side of each board.
4. Begin installing the first row in the right corner of the base wall. Install the first board so the short grooved side is against the expansion shims to your right and the long grooved length of the board is against the expansion shims in front of you.
5. Maintain expansion gap of 3/8" to 1/2" between first board and the wall by using spacers regularly along the length of the wall. Determine straightness of wall by snapping a chalk line. If starting wall is not straight, make notation on first row and saw to shape.

6. Connect the end of the second board to the end of the first board, making sure the boards are tightly connected and firmly positioned against the shims. Use the hammer/rubber mallet and tapping block to tap the tongue end of the second board to ensure a tight fit. Never use the hammer or rubber mallet directly on the flooring as this will cause damage to the board.
7. Continue placing additional boards moving right to left using the same procedure until the first row is complete.
8. You will need to cut off the end of the final board, save the remaining piece for the next row as long as it is at least 8" long. Use the last board Puller to ensure the last board is tight against the preceding board. Place shims between the end of the last board and the wall. Use the shims to wedge the row in tight rendering it immobile.
9. After pre-drilling holes, carefully top nail the first row of boards to the subfloor using 6d finish nails where the boards meet the wall (This will be on three sides of the first and last rows of the installation and on the two ends for all other rows). Place the nails as close to the edge of the boards as possible so they will be covered by the transition and/or wall molding. If this cannot be done, set the nails with a nail punch and fill holes with wood filler. Finish nails should be placed at 8" intervals along the wall.
10. With the flooring nailer/stapler, fasten through the tongues of the first row at 3-4" intervals and 2-3" from the end of each board. If the nailer cannot be used due to interference with the wall, pre-drill and hand nail through the tongue of the board at a 45° angle. Be sure the nail is positioned in the nail pocket. Set the nail with a punch.
11. Start each new row on the right side with the remaining portion of the previous row as long as it is at least 8" long; otherwise cut a new starter board. Stagger end joints (at least 8") and randomly install different lengths to ensure natural appearance. Do not create discernible patterns such as "H" or "steps". Select boards to create a uniform appearance without clusters of short lengths or sections of light or dark planks. Do not install any objectionable boards that have visual defects or are not consistent with the grade being installed.
12. The end joint must be at least 8" from the end joint in the row before it. A minimum of one end joint is required in every row, regardless of width (e.g. hallways).
13. Position the next board, match the tongue and groove at the end only, then, beginning at the opposite end of the board, tap the board onto the previous row with the tapping block. Move the tapping block back toward the right side of the board until you get near the connections with the previous board. Before you finish tapping the board onto the previous row, you must be sure the end joint is tight. If the end joint is not completely tight you may not be able to do so once the long seam is tight. With the flooring nailer, fasten through the tongues of the boards at 8" intervals and 2-3" from the end of each board.
14. Continue process across the room. The last board should be sawn to appropriate width allowing for 3/8" to 1/2" expansion space against walls and all vertical obstructions. The last board puller will be used to install the last row.
15. Top nail the last row with finish nails against the wall as was done with the first row.
16. **Warranty exclusion - squeaking, popping, or crackling from a staple or nail down installation is not covered by product warranty (Ref. Technical Bulletin #7.13.2)**

## CLEANING AND MAINTENANCE

- **Prevent Scratches** - There is no such thing as a "scratch-proof" wood floor, but following these basic procedures will reduce the likelihood and frequency of scratches:
- **Do not drag or roll** furniture or other heavy objects across the floor. Rollers from refrigerators, TV's, stereos, etc will dent the floor. To prevent the denting first lay 1/2" plywood on the floor and roll the appliance or heavy furniture on the plywood.
- Place protective mats under chairs with wheels
- Felt padding should be permanently affixed to the legs of all furniture before it is moved into the space.
- Do not allow people to wear spiked heels on the floor, which will damage even the hardest wood floors and finishes.
- Pet claws should be properly trimmed at all times.
- Work boots and shoes that may have pebbles lodged in the soles should be removed prior to entering.
- **Remove Grit** -!Care should be taken to prevent dirt, sand and grit from accumulating on the surface of your floor. They will act like sandpaper and abrade the finish. Walkoff mats should be placed inside and out at all exterior exits, and the floor should be swept or vacuumed frequently.
- **Mats and Area Rugs** - All mats or rugs should be cleaned and/or replaced on a regular basis. They should also be moved occasionally to allow natural color changes caused by light to occur evenly in all areas. Never use latex or rubber backed mats or rugs; they will permanently stain the floor.
- **Avoid Standing Moisture** - Water and hardwood floors don't mix. Never wet-mop your floor, and always clean up spills and standing water as soon as possible. With water or cleaning agent approved by your flooring professional. Be sure to thoroughly ring out the applicator or mop prior to applying it to the floor. A damp mop is fine as long as the moisture is limited to an amount that will evaporate almost immediately. Moisture that is allowed to seep into the seams between the planks may cause damage to your flooring. Do not allow soiled mats or rugs to stay on the floor as they can trap moisture on the surface.

## RESIDENTIAL LIMITED WARRANTY:

- The finish will not wear through in normal residential conditions with proper maintenance.
- Flooring will be free from manufacturing defects for as long as you own your home (original purchaser only). Manufacturing defects are improper milling, laminating, or assembly.

**THIS LIMITED WARRANTY IS MADE SUBJECT TO THE FOLLOWING CONDITIONS:**

- The flooring must be used only indoors in residential areas and installed and used in accordance with our installation procedures.
- The installation was done in compliance with the written instructions, and humidity levels do not drop below 30%.
- No warranty coverage is provided for flooring that contains obvious defects of any kind that were installed nonetheless.
- The surface wear must not have occurred as a result of incorrect maintenance or accidents such as damage caused by scratching, impact, or cutting. It must be readily visible and be 10% or more of the floor. Gloss reduction is not considered wear through.
- Wood is a natural product; variations in its grain pattern, color, and or texture are normal and are not considered defects and no warranty shall apply to those. The warranty will not apply to the natural color changes which occur in wood over time due to light exposure

## WARRANTY EXCLUSIONS:

- Squeaking, popping or crackling due to low spots, uneven sub floor, insufficient expansion space, or nail/staple down installation method.
- Dimpling on face of flooring due to nail/staple down.
- Color match to other wood products such as moldings, stairs, cabinets.
- Indentations, scratches, or damages caused by negligence, exposure to extreme heat, dryness, or water saturation (including but not limited to a leaky faucet,, broken pipe and wet mopping), accidents, abuse, misuse, indentation from high heels or pet nails, pet stains, furniture rollers, stains as a result of chemical or industrial products, failure to follow all the manufacturers specific written installation and maintenance instructions, insufficient protection or improper alterations of the original product.
- This writing is the complete and exclusive statement of the warranty and is in lieu of all other express and/or statutory warranties. The manufacturer assumes no liability for incidental or consequential damages, so this exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state or province to province. The sole remedy provided herein is the repair or replacement of the defective products. Labor for installation is not covered by this warranty.
- No installer, retailer, distributor, or agent has the authority to increase or alter the obligations or limitations of this warranty.
- Any and all disputes arising out of the purchase of this product or this warranty shall be subject to mandatory and binding arbitration in Wausau, Wisconsin, pursuant to the rules of the American Arbitration Association. Any jury trials are expressly waived.Never use the hammer or rubber mallet directly on the flooring as this will cause damage to the board.