

Installation Instructions and Limited Lifetime Residential Warranty 2G / FD Prefinished Engineered Plank

PLEASE READ THE ENTIRE INSTALLATION INSTRUCTIONS BEFORE PROCEEDING WITH THE ACTUAL INSTALLATION

OWNER / INSTALLER RESPONSIBILITY

- Hardwood flooring is a product of nature, which is characterized by distinctive natural variations in grain and color and are not considered flaws. Hardwood flooring will also experience a change in color over a period of time. The degree of change depends upon the specie and the amount of UV exposure. This hardwood flooring is manufactured in accordance with accepted industry standards, which permit a grading defect tolerance not to exceed 5%. The defects may be of a manufacturing or natural type.
- The owner/installer assumes all responsibility for final inspection of product quality. This inspection of all flooring should be done **before** installation. Carefully examine the flooring for color, factory finish, grade, and quality before installing it. Do not install (or cut off) pieces with glaring defects whatever the cause. If material is not acceptable, contact your distributor or dealer immediately before installation. Installation implies acceptance. **No warranty will be offered for material with visible defects once the product is installed.**
- Before beginning the installation of any hardwood flooring product, the installer must determine that the environment of the job site and the condition and type of the sub floor involved is acceptable, insuring that it meets or exceeds all requirements, which are, stipulated in the installation instructions which follow. The manufacturer declines any responsibility for job failure resulting from or associated with inappropriate or improperly prepared sub floors or job site environment deficiencies. For best results, we suggest using a National Wood Flooring Association Certified Professional for your flooring installation.
- The installer must document all site tests and the records must be available if a claim is filed.
- The use of stain, filler, or putty stick for the correction of defects, small cracks, or face nail holes during installation should be accepted as normal procedure.
- When ordering, 5-10% must be added to the actual square footage amount needed for grading and cutting allowances.
- We strongly recommend that you visit the NWFA website at www.woodfloors.org for installation help and maintenance tips.

JOB SITE INSPECTION & ACCLIMATION

- In new construction, hardwood flooring should be one of the last items installed. All work involving water or potential ground debris (plumbing, dry wall, etc.) should be completed prior to wood flooring being installed. Heating and air systems should be fully operating, maintaining a consistent room temperature at 60-80° F and a constant relative humidity of 35-55%.
- Flooring should not be delivered until the building has been closed in and cement work, plastering, painting, and other materials are completely dry. New concrete and plaster should be cured and at least 30 days old prior to moisture testing.
- Check basements and under floor crawl space to be sure that they are dry and well ventilated to avoid damage caused by moisture. Crawl spaces must have a minimum 6 mil black polyurethane film as a vapor retarder on the ground surface if the crawl space is not finished with cement.
- Moisture content of both the sub-floor and the flooring should be checked and recorded before any work begins.
- Flooring should be at the job site at least 48 hours prior to installation for acclimation. **The engineered flooring must be properly acclimated to temperature and humidity conditions prior to proceeding with installation. Do not open cartons until ready to install.** Follow the NWFA guidelines for acclimation (www.nwfa.org) on the job site and moisture equilibrium.
- Handle with care. Do not stand on ends. Store flooring in a dry place, being sure to provide at least a four-inch air space on or around cartons.
- Do not store directly upon on grade concrete or next to outside walls. Cartons should be placed in the installation area.
- The installation site should have consistent room temperature of 60°-80° F and a constant relative humidity level of 35-55% for a minimum of 14 days prior to installation of any flooring product.
- Engineered flooring is for below grade, on grade or above grade installation only and **cannot** be installed in full bathrooms or other high moisture areas.
- Some Engineered Flooring can be installed over Radiant Heat using the floating floor method on or above grade. See approved species below or check with your distributor.

SUB FLOOR PREPARATION

APPROVED SUB FLOOR TYPES:

- 1) Agency approved 5/8"(19/32") minimum thickness or 3/4" (23/32") CDX Exposure 1 plywood 16" on center floor joists properly nailed.
- 2) Agency approved 3/4" (23/32") underlayment grade OSB Exposure 1 16" on center floor joists properly nailed.

Note: When installing approved plywood or OSB, refer to specific structural panel manufacturer's instructions for fastening and spacing.

- 3) Agency approved underlayment grade particleboard.(Nail down and glue down installation not recommended on particleboard)
- 4) Existing wood floors (installed at right angle only).
- 5) Concrete Slab
- 6) Resilient tile, sheet vinyl, and ceramic tile only over an above mentioned and approved sub floor.

SUB FLOORS MUST BE:

- **CLEAN** - Scraped or sanded, swept, free of wax, grease, paint, oil, previous or existing glues or adhesives, and other debris
- **SMOOTH/FLAT** - Within 1/8" on 6' radius. Sand high areas or joints, fill low areas (no more than 1/8") with a cement type filler no less than 3000 p.s.i. Follow the instructions of the leveling compound manufacturer, but make certain the leveling compounds are completely dry before beginning installation. Any irregularities may cause hollow spots between the flooring and sub floor in any installation method and are not warranted.

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- **STRUCTURALLY SOUND** - Nail or screw any loose areas that squeak or show movement. Replace any delaminated or damaged sub flooring or underlayment. Avoid subfloors with excessive vertical movement. If the subfloor has excessive vertical movement or deflection before installation it is likely it will have deflection after the flooring is installed.
- **DRY** - - Moisture content of sub floor **must not** exceed 14% prior to installation of wood flooring. All moisture testing must be verified & documented before and after wood has been acclimated 48 hours and job site requirements met.

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 4% difference than moisture content of products being installed.

CONCRETE SLABS (regardless of existing floor covering): All concrete sub floors must be tested for moisture content prior to installation of the hardwood flooring. The concrete subfloor must be a minimum of 30 days old prior to moisture testing. The moisture content of the concrete sub floor must not exceed 3 lbs. /1000 sq. ft. /24 hour emissions per CCTM and or 75% per Relative Humidity Test

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

- 1) Use an approved calibrated concrete moisture meter (Tramex Concrete Encounter) as a preliminary measurement for moisture. Follow manufacturer's specific calibration requirements. Any reading higher than 4% indicates the need for a Calcium Chloride (ASTM F-1868) and or Relative Humidity test (ASTM F-2170) and pH test.
- 2) Perform a polyfilm test. Tape down 2' x 2' polyfilm squares (a clear garbage bag or plastic drop cloth will do) in several places on the floor. Wait 24-48 hours, and then check for the appearance of condensation on the inside of the bag or plastic for a darkening on the concrete sub floor. Either occurrence signals the likely presence of excess moisture, requiring a mandatory calcium chloride test.
- 3) Test with a 3% Phenolphthalein in Anhydrous Alcohol Solution. Do not apply solution directly to the concrete surface. First chip 1/4" deep into the concrete test area and apply several drops of the solution. Any change in color signals the likely presence of excess moisture, requiring a mandatory calcium chloride test.
- 4) Once you have determined the moisture content and that moisture is present a calcium chloride and pH alkalinity test **must** be performed to determine the moisture emissions through the concrete slab of the moisture and alkalinity in the concrete floor so appropriate corrective action can be taken.
 - Perform a calcium chloride test (ASTM 1869) according to the manufacturer's instructions. The maximum acceptable reading is 3-lbs. /24 hours/1000 sq. ft. for moisture emissions. Three test for the first 1,000 square feet and one test for every 1,000 square feet thereafter.
 - Perform a Relative Humidity test (ASTM2170) according to the manufacturer's instructions. The maximum reading is 75%. Three test for the first 1,000 square feet and one test for every 1,000 square feet thereafter.
 - Perform a pH alkalinity test according to the manufacturer's instructions. A pH reading of 6-9 on a pH number scale of 1-14 is acceptable.
 - If the test results exceed this number the concrete slab should be sealed with appropriate sealers to correct those emissions as per the manufacturer's recommendations. This must be documented before installation.

Note: If excessive moisture (3-lbs. to 7-lbs.) is present or anticipated, use a moisture retardant system to seal the concrete or an inexpensive sheet vinyl/slip sheet glued directly to the concrete slab to reduce vapor intrusion. Follow the instructions of the sheet vinyl manufacturer, using a premium grade alkaline resistant adhesive, and full spread application system to bond the vinyl to the subfloor. For additional requirements and information, refer to our Slip Sheet Technical Note.

Note: If a sub floor has been flooded or rained upon, it may not be suitable to install flooring.

INSTALLATION on WOOD SUBSTRATE:

Note: Do not use the glue down or staple down installation method on underlayment grade particleboard.

Sub floor should be constructed of 5/8" (19/32") or thicker plywood or 3/4"(23/32") OSB when installing directly over minimum 2 x 10 floor joists 16" on center. For up to 19.2" on center 3/4"(23/32") plywood or OSB should be used. For 19.2" to 24" on center 7/8" plywood or OSB should be used. Structural Panels must be installed sealed side down. 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 directly over old wood or strip floor, sand any high spots, re-nail old floor to eliminate squeaks or loose boards, and install new planks at right angle (perpendicular) to the old floor, or overlay old floor with 1/4" plywood underlayment. Leave a 1/8" gap at the edges and nail with 7D or larger nails every 6" at the edges and every 12" in both directions and through the interior of each sheet of plywood. Edge swell should be flattened. The moisture content of the wood or plywood should not exceed 14%.

INSTALLATION on CONCRETE SLABS:

All concrete sub floors should be tested for moisture content. New concrete slabs require a minimum of 30 days curing time before moisture testing and installation. Concrete sub floors must be free of existing adhesives, grease, oil, dirt, and curing compound. These may be removed chemically or mechanically, but do not do not use a solvent based stripper. The residual solvents can prohibit satisfactory bond of floor adhesives, the concrete, and the flooring. To ensure a lasting bond make sure the perimeter of the foundation has adequate drainage and vapor retarder.

Apply a liquid based moisture vapor retarder coating to the subfloor. Over concrete use only concrete moisture sealer systems that are specifically designed for moisture suppression and adhesive bonding properties. Follow manufacturer's guidelines and recommendations. The underlying floor must be permanently dry and protected against moisture. If this requirement is not met, the planks can swell, shrink and warp and may void the warranty.

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Note: LIGHTWEIGHT CONCRETE:

Lightweight concrete has a dry density of 100 pounds or less per cubic foot and is only suitable for engineered wood floors when using the floating installation method. Many products have been developed as self-leveling toppings or floor underlayment. These include cellular concrete, resin reinforced cementations, underlayments and gypsum-base materials. Although some of these products may have the necessary qualifications of underlayment for wood flooring installation, others do not. To test for lightweight concrete, scrape a coin or key across the surface of the sub-floor. If the surface powders easily or has a dry density of 100 pounds or less per cubic foot, use only the floating installation method.

INSTALLATION on SUB-FLOORS OTHER THAN WOOD OR CONCRETE:

Do not install over carpets.

Note: Perimeter glued resilient vinyl and rubber tiles are unacceptable underlayments and must be removed.

Terrazzo, marble, tile and any other hard surfaces that are well bonded to sub floor, dry, structurally sound and level, as described above, are suitable as a sub floor for this engineered hardwood flooring installation. As above, the surface must be sound, tight, and free of paint, oil, existing adhesives, sealers, wax, grease, and dirt. Terrazzo, marble, and ceramic tile must be scuffed to assure adhesion.

The flooring can be glued or floated directly over full spread permanently bonded acoustical cork. Density should be 11.4 lb. / cubic ft. and installed according to cork manufacturer's recommendations. Do not use foam underlayment when using the floating method over cork.

ASBESTOS WARNING! Do not sand existing resilient tile, sheet flooring, backing, or felt linings. These products may contain asbestos fibers that are not readily identifiable. Inhalation of asbestos dust can cause asbestosis or other serious bodily harm. Check with local, state, and federal laws for handling hazardous material before attempting the removal of these floors.

INSTALLATION ON RADIANT HEATED SUBFLOORS:

- Use floating floor installation only. Do not use the glue down or staple installation method on radiant heat flooring.
- Only Elm, Maple or Birch are approved for use on radiant heat applications. Do not use Oak, American Cherry, Hickory or any Exotic Specie.
- Warranty will be voided if anything other than approved species or installation method is used.
- The end consumer should be aware that minor gapping between wood planks during the heating season is a normal occurrence with hardwood flooring installed over radiant heated systems.

JOB SITE PREPARATION

- Verify floor is level and structurally sound. Repair as needed. Sub floor irregularities may cause any wood flooring installation to develop hollow spots between the flooring and the sub floor. These are not the result of any manufacturing defect.
- Proper moisture testing is the key to determine readiness for installation.
- Follow the NWFA guidelines for acclimation (www.nwfa.org) on the job site and moisture equilibrium.
- Undercut door casings
- Remove any existing wall base, shoe molding, quarter round or doorway thresholds
- Regardless of the installation method all floors should be racked.

FLOATING FLOOR INSTALLATION METHOD

REQUIRED TOOLS AND ACCESSORIES

- * Tape Measure
- * Moisture Meter (wood / concrete)
- * Underlayment and Vapor Retarder(if needed)
- * Mallet (light colored)
- * Circular or Hand Saw
- * Miter or Table Saw
- * Drill with 1/16" bit
- * Tapping Block
- * Chalk Line and Chalk
- * Hammer
- * Safety Equipment (Goggles & Mask)
- * Utility Knife
- * 3/8 "or 1/2" Spacers
- * Hardwood Flooring Cleaner
- * Broom
- * Foam Underlayment
- * 6 mil polyethylene film
- * Clear Packing Tape

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When installed using the floating installation method all sub floors should be covered with either a 3 in 1 Underlayment or an approved 1/8" thick closed cell foam underlayment following the instructions inside the packaging. When using a 1/8" thick closed cell foam underlayment over a concrete sub floor, you must also use a 6 or 8 mil polyethylene film which acts as a vapor retarder.

All engineered products when installed using the floating installation method, can be installed below grade, on grade and above grade. However the following instructions must be followed for below grade installation.

The concrete slab should be sealed or painted with a good concrete sealer. Then the 3 in1 Underlayment or the 6 mil poly film should be installed with ends butted together and taped with a clear 2" packaging tape to prevent any moisture from coming up through the seams. The 3 in 1 underlayment or 6 mil poly film 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 the 3 in1 underlayment, you are ready to begin the installation. However, if you have used the 6 mil poly film, roll out on top of the 6 mil poly film a 1/8" thick closed cell foam, butting the edges but not overlapping.

Note: Any pre-existing wood panels or strips that are floating or glued to the concrete slab must be removed before installation using the floating method.

RADIANT HEAT SUB FLOORS:

ONLY PREFINISHED ELM, MAPLE OR BIRCH ARE APPROVED FOR USE ON RADIANT HEAT APPLICATIONS. DO NOT USE OAK, AMERICAN CHERRY, HICKORY OR ANY EXOTIC SPECIES. WARRANTY WILL BE VOIDED IF ANTHING OTHER THAN APPROVED SPECIES IS USED.

RADIANT HEATING SYSTEMS USED MUST BE DESIGNED AND CONTROLLED SPECIFICALLY FOR HARDWOOD FLOORING BY THE SYSTEM MANUFACTURERE AND MUST INCLUDED AN OUTSIDE TEMPERATURE PROBE AND SURFACE TEMPERATURE CONTROLS.

Follow the below grade instructions (above) for underlayment requirements and installation instructions. Most radiant heat installations call for the requirements below when installing over radiant heat systems. Always refer to the manufacturer of the radiant heating system for detailed instructions.

- Newly installed water- heated-radiant- heat systems should be operational for a minimum of 4 weeks with the temperature set between 64°-68°F to insure a dry subfloor with the proper moisture content.
- Existing water- heated-radiant- heat systems must be operated a temperature of 64°F for a minimum of 4 days before installation of hardwood flooring.
- A pressure test must be preformed and documented by prior to installation.
- At the time of installation, sub floor must be 64°-68°F.
- Use floating floor installation only. Do not use the glue down installation method on radiant heat flooring .
- Use an adhesive approved by the system manufacturer for edge and end joints
- After installation do not change the radiant heat settling for 48 hours.
- Gradually increase the heat 3 - 5° increments daily to adjustthe heating system temperature up or down to allow the flooring to adjust to the temperature changes
- The maximum temperature of sub floor under normal use should not exceed 85° F. (Check with heat system manufacturer).
- For correct water temperature inside heating pipes, check with manufacturer's suggested guidelines.
- 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 under pipes.
- Room temperature should be maintained between 60-80 ° F and not vary more than 15° F from season to season.
- Relatue Humidity must be maintained in the range of 35-55% humidity in the home for radiant heated rooms.

IMPORTANT: DO NOT INSTALL CABINETS OR WALLS ON TOP OF THE FLOORING WHEN USING THE FLOATING INSTALLATION METHOD.

Step 1: GETTING STARTED

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

- 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.

- The planks install easily without glue. Simply attach the tongue on one plank to the groove side on another plank and the planks will lock snugly together.



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- Begin the installation of the planks in the left hand corner of the room with the long direction parallel to the incoming sunlight source or to the longest wall of the room (if this is possible). Be sure to install the first row of boards with the tongue side facing the wall.

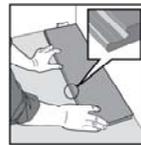
Note: Slightly bowed boards can be installed and are not considered defective.

- Use 3/8" or 1/2" expansion spacers (depending on the thickness of the flooring) to provide a gap for the seasonal expansion of the flooring along the walls of the entire room. Always place expansion spacers against the wall where the two boards meet. This will make maintaining a good square easier.

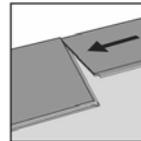
Note: Larger rooms require additional expansion space. Add 1/16" to the width of the spacers for every 3' the room extends beyond 25'. Dimensions exceeding 40' require the use of a t-molding for expansion.

Step 2: POSITION THE FIRST ROW

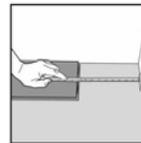
- Begin installing the first row by laying a plank flat over the underlayment.



- With the tongue side facing the wall align the end of the second plank with the first and lock the end joints together by pushing it straight down on top of the first plank.



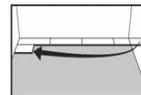
- Lock the ends of the planks together until the first row is finished. Cut the last board in the row to the necessary length. If leftover plank is 12" or longer use it to begin the next row or use a shorter length board from the box.



- 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. Then the first row is complete, you **must** have a straight, even base established.

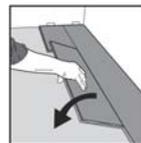
Step 3: INSTALLING THE REST OF THE FLOOR

- Always stagger 12" between the end joints of adjacent plank rows. The end joints should not repeat visually across the installed floor and avoid "H" patterns.



- After installing the first row of planks, Line up the first plank of the second row so the outside end is even with the outside end of the first plank of the first row.

- Lock the long side of the second row plank onto the plank on the first row by inserting the tongue of the second plank into the groove on the first plank while holding the plank at a 45 degree angle from the floor. Press the second plank down flat and the tongue will lock firmly into place.

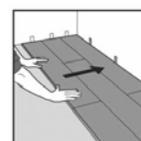


- After locking in place lay the remaining planks in the row by first locking the long side in place and then tapping the end of the plank to slide firmly into place at its end. (Gently tap down end joint with the light colored mallet to ensure they ends are locked).

- The planks cannot be forced together. If they are not lying flat then they will not align properly during locking. If this occurs, begin again insuring the edges of both planks meet evenly while applying equal pressure while rotating the plank.

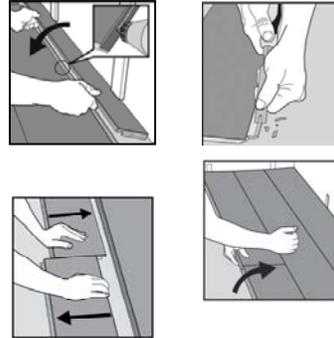
- Once the third row has been clicked into place check for a tight fit on sides and ends and that the spacers are in place.

- To install the rest of the flooring, continue placing the boards from left to right, plank by plank, and row by row.



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- Under doorjamb or toe kicks of cabinets there is not enough clearance to achieve the 45 angle necessary to engage the sides. The tongue portion of the sides should be cut away using a wood chisel and the boards glued together using high quality white wood (PVAC) glue. Remove any excess glue with a damp cloth.
- To disengage the planks lift the long side to a 45 degree Angle and remove. Slide the ends in opposite directions to disengage. Do not pull upwards to disengage the short ends so as not to break them.



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 with the tongue toward the wall, directly on top of the last row installed.
- Take a full width scrap piece of the product that is being installed with the face down and the tongue side against the wall. Use 3/8" or 1/2" 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.

Step 5: FINISHING THE FLOOR

- The use of putty or a non-silicone based filler to cover small cracks. Test filler on spare pieces first to ensure it blends with the floor.
- Make sure when the installation is complete that the expansion spacers are removed and the expansion space is covered with the appropriate molding such as baseboard and 1/4 round or shoe molding. Do not nail moldings into the floor but nail into the wall.
- Vacuum the floor thoroughly using the soft brush attachment or dust mop to remove any dirt and debris.
- Use a quality Hardwood Flooring cleaner to finish the floor. We recommend Bona Swedish Formula Hardwood Cleaner
- If the floor is to be covered, do not use plastic, use a breathable wrap, or material such as cardboard or kraft paper to protect the finish.
- Final inspection by the end user should be conducted from a standing position.
- Damp mopping, cleaning, furniture or heavy objects can be put back into place immediately after installation.

GLUE DOWN INSTALLATION METHOD

REQUIRED TOOLS AND ACCESSORIES

- * 3/16" x 5/32" deep v notch trowel or 1/4" x 1/4" x 3/16" square notch trowel. Follow adhesive manufacturers' guidelines.
- * Use a top quality adhesive (follow the adhesive manufacturers recommendations)
- * Preferred type: moisture cure urethane floor glue.
- * Concrete Sealer
- * Moisture Meter (wood & concrete)
- * Mallet (light colored)
- * 100 or 150 Lb. Roller
- * Hammer
- * Circular or Hand Saw
- * Utility Knife
- * Miter or Table Saw
- * Pry Bar
- * Drill with 1/16" bit
- * 6-8 d screw shank nails
- * Chalk Line and Chalk
- * Tape Measure
- * Safety Equipment (Goggles & Mask)
- * Nail Punch
- * Broom
- * Hardwood Flooring Cleaner

IMPORTANT: DO NOT INSTALL USING THE GLUE DOWN METHOD OVER RADIANT HEAT

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APPROVED SUB FLOOR: The flooring can be glued directly to a concrete subfloor. Apply a liquid based moisture vapor retarder coating to the subfloor. On concrete subfloors use only a concrete moisture sealer system that is specifically designed for moisture suppression and adhesive bonding properties. The subfloor must be permanently dry and protected against moisture.

All engineered products when installed using the glue down method, can be installed on grade or above grade. However the following instructions must be followed.

Step 1: GETTING STARTED

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

- 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.

- The planks install easily without glue. Simply attach the tongue on one plank to the groove side on another plank and the planks will lock snugly together.



- Begin the installation of the planks in the left hand corner of the room with the long direction parallel to the incoming sunlight source or to the longest wall of the room (if this is possible). Be sure to install the first row of boards with the tongue side facing the wall.

Note: Slightly bowed boards can be installed and are not considered defective.

- Use 3/8" or 1/2" expansion spacers (depending on the thickness of the flooring) to provide a gap for the seasonal expansion of the flooring along the walls of the entire room. Always place expansion spacers against the wall where the two boards meet. This will make maintaining a good square easier.

Note: Larger rooms require additional expansion space. Add 1/16" to the width of the spacers for every 3' the room extends beyond 25'. Dimensions exceeding 40' require the use of a t-molding for expansion.

Step 2: SPREADING THE ADHESIVE

- Urethane adhesive is the only recommended adhesive.
- Hold the trowel at a 45°-60° angle and spread adhesive onto an area no larger than 30-40 square feet at one time and at a spread rate of 40-60 square feet per gallon.
- After spreading, allow adhesive to flash off for 30-45 minutes before installing wood flooring. Maximum available working time is 45-50 minutes. (Colder temperatures or high humidity will extend times and warmer temperatures or low humidity will shorten times.)
- Do not install the flooring after adhesive dries. Test by touching adhesive. If not readily transferred to finger, adhesive is already dried. If adhesive has dried, remove adhesive and apply new material. Periodically check flooring to confirm 100% adhesive transfer. It is not required but suggested that within one hour of setting wood, roll the installation with a 100-150 lb. roller to promote good contact with the adhesive.
- Always refer to the specific instructions on the hardwood flooring adhesive label.

Step 3: POSITION THE FIRST ROW

- Install the flooring parallel to the longest outside (exterior) wall in the room. Measure out from the wall on the door side of the room in two places 10 1/2" for 5" wide products. Mark and snap a chalk line across the two marks.

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

For concrete sub floors: If you are working on a concrete sub floor, take a piece of 1" x 2" x 8' board and using 1" concrete nails, nail the board onto the dry side of your chalk line.

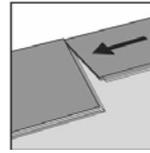
This will hold your first row of starter boards in place.. The area between the chalk line and the wall is the working area and will be the last to be installed.

- After the adhesive has been spread following Step 2, begin installing the first row by laying a plank flat over the adhesive. Install the piece of flooring with the groove towards you and the tongue facing the opposite wall. Line up the groove of the flooring with the chalk line then press the flooring into the adhesive. Begin installing the first row by laying a plank flat over the adhesive.

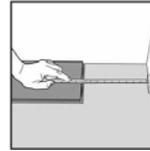


Installation Instructions and Limited Lifetime Residential Warranty 2G / FD Prefinished Engineered Plank

- With the tongue side facing the wall align the end of the second plank with the first and lock the end joints together by pushing it straight down on top of the first plank.



- Working 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 lock the ends of the planks together until the first row is finished.



- Cut the last board in the row to the necessary length. If leftover plank is 12" or longer use it to begin the next row. Or use a shorter length board from the box.

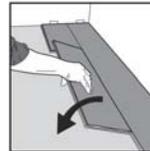


- If the starting wall is out of square, it will be necessary to scribe the first row to match the wall, allowing the opposite side of the row to present a true square base for the rest of the floor. When the first row is complete, you must have a straight, even base established.

Step 4: INSTALLING THE REST OF THE FLOOR

- Always stagger 12" between end joints of adjacent plank rows. The end joints should not repeat visually across the installed floor and avoid "H" patterns.
- After installing the first row of planks, line up the first plank of the second row so the outside end is even with the outside end of the first plank of the first row.

- Lock the long side of the second row plank onto the plank on the first row by inserting the tongue of the second plank into the groove on the first plank while holding the plank at a 45 degree angle from the floor. Press the second plank down flat and the tongue will lock firmly into place.



- After locking in place lay the remaining planks in the row by first locking the long side in place and then tapping the end of the plank to slide firmly into place at its end.
- The planks cannot be forced together. If they are not lying flat then they will not align properly during locking. If this occurs, begin again insuring the edges of both planks meet evenly while applying equal pressure while rotating the plank.
- Remove and lift a plank periodically to make sure that there is 100% contact between the board and the hardwood flooring adhesive
- Once the third row has been installed check for a tight fit on sides and ends and that the spacers are in place.

- To install the rest of the flooring, continue spreading the adhesive (Step 2) and placing the boards from left to right, plank by plank, and row by row.

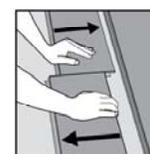
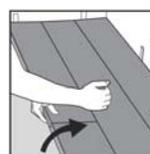


- Clean adhesive from the surface frequently using an adhesive cleaner. Urethane adhesive is difficult to remove when cured. Use clean towels to prevent haze and adhesive residue.

- Under doorjamb or toe kicks of cabinets there is not enough clearance to achieve the 45 angle necessary to engage the sides. The tongue portion of the sides should be cut away using a wood chisel and glue the boards together using a high quality carpenter's glue.



- Note:** To disengage the planks lift the long side to a 45 degree angle and remove. Slide the ends in opposite directions to disengage. Do not pull upwards to disengage the short ends so as not to break them.



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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 with the tongue toward the wall, directly on top of the last row installed.
- Take a full width scrap piece of the product that is being installed with the face down and the tongue side against the wall. Use 3/8" or 1/2" spacers against the wall to ensure the proper expansion space.
- Draw a line along the row moving down the wall. The line gives the proper width for the last row which, when cut, can then be wedged into place using the pull bar.

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 insure a tight fit when used to strap each continuous row of installation.

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

Step 6: FINISHING THE FLOOR

- A drying time of 24 hours is recommended before any damp mopping, cleaning or heavy objects or furniture can be put back into place.
- The use of putty or a non-silicone based filler to cover small cracks or face nails holes should be considered normal in hardwood flooring installations. Test filler on spare pieces first to ensure it blends with the floor.
- Make sure when the installation is complete that the expansion spacers are removed and the expansion space is covered with the appropriate molding such as baseboard and 1/4 round or shoe molding. Do not nail moldings into the floor but nail into the wall.
- Vacuum the floor thoroughly using the soft brush attachment or dust mop to remove any dirt and debris.
- Use a quality Hardwood Flooring cleaner to finish the floor. We recommend Bona Swedish Formula Hardwood Cleaner
- If the floor is to be covered, do not use plastic use a breathable wrap, or material such as cardboard or kraft paper to protect the finish.
- Final inspection by the end user should be conducted from a standing position.

**CAUTION: WOOD DUST WARNING**

The State of California (OEEHA Prop 65, California Health, and Safety Code Section 25249.6) has classified Wood Dust as a substance known to cause cancer. Drilling, sawing, sanding, or machining wood products generates wood dust.

The State of Minnesota (Statute 1984 sections 144.495 and 325F.18) require all HDF and plywood sold or used in Minnesota meet the HUD Formaldehyde Emission Standard 24 CFR Sections 3280.308 and 3280.406.

Airborne wood dust may cause lung, upper respiratory tract, and eye and skin irritations. Some wood species may cause dermatitis and /or respiratory allergic reactions. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans. Wood dust can also cause a flammable or explosive hazard

Precautionary measures:

- Recover dust for disposal. Sweep or vacuum dust for disposal or if power tools are used, equip them with a dust collector.
- Avoid dust contact with an ignition source
- Avoid prolonged or repeated breathing of wood dust in air. If there are high levels of dust then use an NIOSH- designated dust mask.
- Avoid dust contact with eyes and skin.

First Aid Measures:

- If inhaled, move to fresh air. In case of contact flush eyes and skin with water. If irritation persists, call a physician.

Please contact your dealer or distributor to request a Material Safety Data Sheet (MSDS)

IMPORTANT NOTE: The information and data above is based on the experience of occupational health and safety professional. It comes from sources believed to be accurate or otherwise technically current. It is the user's responsibility to determine if this information is suitable for specific application and to follow any necessary safety precautions.

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CARE GUIDE

CLEANING YOUR FLOOR

- Use a damp cloth to blot up spills and spots as soon as they happen. For tough spots such as oil, paint, markers, lipstick, ink, tar or cigarette marks, use acetone/nail polish remover then wipe with a damp cloth. Always avoid allowing liquids to stand on your floor.
- Vacuum, (using the hard floor attachment not the beater bar), dust mop, or sweep the floor to minimize abrasive grit, debris, and dirt.
- **Do not** damp mop. Periodically clean the floor with a hardwood flooring cleaner, which is specially formulated for the finish. We recommend Bona Swedish Formula Hardwood Cleaner.
- **Do not** use oil based, wax, and polish, strong ammoniated or abrasive cleaners, steel wool or scouring powder to clean the floor.
- **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.
- **Do not** use any type of buffing machine.

PROTECTING YOUR FLOOR

- Use quality area rugs and doormats by outdoor entrance areas to prevent dirt, sand, grit and other substances such as oil, asphalt or driveway sealer from being tracked onto your floor. The rugs must be made of a breathable material to prevent moisture entrapment. Rugs with rubber bottoms or no-skid pads may leave an imprint on the flooring.
- Sweep, dust, or vacuum the floor regularly to prevent accumulation of dirt or grit that can scratch or dull the floor finish.
- Use protective casters/caster cups or felt pads on the legs of furniture to prevent damage to the flooring. Use wide bearing leg bases, barrel type caster wheels, rubber rollers to minimize indentations and scratches from heavy objects. As a rule of thumb, the heavier the object, the wider the floor protector should be. Make certain to keep them clean and well maintained.
- Do not use rubber or foam backed plastic mats as they may discolor or leave an imprint on the floor. To prevent slippage use an approved vinyl rug underlayment.
- Maintain a normal indoor relative humidity level between 35 and 55% and a temperature of 60°-80° F throughout the year, to minimize the natural expansion and contraction of wood.

Heating Season (Dry): A humidifier is recommended to prevent excess shrinkage due to low humidity levels. Wood stove and electric heat tends to create very dry conditions. Minor gapping between wood planks during the heating season is a normal occurrence with hardwood flooring installed over radiant heat.

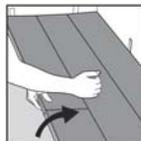
Non-Heating Season (Wet): An air conditioner or dehumidifier or periodically turning on your heating system can maintain humidity during the summer months. Avoid excessive exposure to water during periods of inclement weather.

- Avoid gouges or cuts in your floor from sharp objects. While your floor is very wear resistant, sharp or pointed objects can nevertheless damage it.
- Don't walk on your floor with stiletto-style heels, spiked shoes, or cleats; they may cause indentations in your floor.
- Keep pet's nails trimmed to minimize finish scratches.
- Rearrange area rugs and furniture periodically so the floor ages evenly. UV sunlight will soften the tone of different species of hardwood to varying degrees.
- Protect your floor from direct sunlight. Use curtains and UV resistant film on large glass doors and windows. Over time, natural and artificial light could discolor the floor.
- Use a dolly when moving heavy furniture or appliances. But first, put down a sheet of quarter inch plywood or Masonite to protect the floor and help prevent denting. Carpet or cardboard is not adequate to prevent surface compression scratches. Never try to slide or roll heavy objects across the floor to avoid denting.

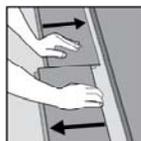
REPAIRING YOUR FLOOR

- Minor damage can be easily repaired with finishing putty available in blending colors.
- Retain several planks for future repairs.
- Major damage will require board replacement. If using the floating installation only, your floor can easily be disassembled to allow for replacement.

To disengage the planks lift the long side to a 45 degree angle and remove. You may need to gently knock just above the joint.



Slide the ends in opposite directions to disengage. Do not pull upwards to disengage the short ends so as not to break them.



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MOLDINGS

Installation Tips:

- Moldings must be predrilled avoid splitting whenever they are to be secured with nails or fasteners. Use a 10 or 12" 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.
- 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. Rather, 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 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 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 - Typically used at exterior doorways as a transition between flooring and the doorway threshold. It is also used to transition a wood floor to different floors 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.

T-Molding - Commonly used in doorways to join two wood floors in adjoining rooms. Also recommended when making transitions from a wood floor to another floor that is approximately the same height such as ceramic tile, hardwood or laminate floors, not carpet. T-Moldings are also used to provide expansion joints when a floor dimension exceeds the length of 40' or a width of 30'.

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

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. Also provides the proper overhang for a transition from one floor level to the next such as the step into a sunken living room.

RESIDENTIAL and LIGHT COMMERCIAL WARRANTY

Manufacturer warrants the original purchaser of its Engineered Hardwood Flooring in North America to the following warranties:

LIMITED LIFETIME FINISH and WEAR RESIDENTIAL WARRANTY

Manufacturer warrants to the original purchaser that its factory applied finish will not wear through, peel off, or delaminate under normal and ordinary residential use and with proper maintenance and floor care.

LIMITED LIFETIME STRUCTURAL INTEGRITY RESIDENTIAL WARRANTY

Manufacturer warrants its products in their original manufactured condition to be free from manufacturing and workmanship defects including delamination (separation between plies), milling, and grading. (Up to 5% of industry standard).

These warranties, which begin from the date of purchase, apply only to products used in indoor dry residential applications either below grade, on grade or above grade and are valid only in North America.

These warranties apply only to the original purchaser and the original residential location where the product is installed and are not transferable.

5 YEAR FINISH and WEAR LIGHT COMMERCIAL WARRANTY

Manufacturer warrants to the original purchaser that its factory applied finish will not wear through, peel off, or delaminate for a period of Five (5) years from the date of purchase under approved light commercial use and with proper commercial maintenance and floor care.

10 YEAR STRUCTURAL INTEGRITY LIGHT COMMERCIAL WARRANTY

Manufacturer warrants its commercially rated products in their original manufactured condition to be free from manufacturing and workmanship defects including delamination (separation between plies), milling, and grading for a period of Ten (10) Years. (Up to 5% of industry standard).

Installation Instructions and Limited Lifetime Residential Warranty 2G / FD Prefinished Engineered Plank

Any product designated as “tavern”, “economy”, “cabin grade”, “seconds”, “B grade” or “as is” is not covered by any of these warranties.

Hardwood flooring being a natural product will continue to expand and contract during seasonal and temperate changes. Product when properly installed may experience slight separation (up to 1/32”) between boards. If minor separation or seasonal cracks occur, they are not covered by this warranty.

The accepted industry standard is an allowance of up to 5% of the flooring shipped to contain milling, grading, handling, and occasional finish defects and shall not be considered a structural defect.

Finish wear through is defined as 100% finish removal over a minimum of 10% of the total installation.

Product thought to be defective by the person doing the installation should be returned to your dealer for inspection and possible replacement **PRIOR TO INSTALLATION**. Installation implies acceptance. No warranty will be offered for obvious visual defects or appearance related claims such as grade or color once the products are installed.

IF THE ENGINEERED FLOORING SHOULD FAIL TO MEET THE TERMS OF THE WARRANTY, MANUFACTURER, AT ITS OPTION, WILL EITHER:

- Supply replacement product or parts to repair, refinish, or replace the defective product at the manufacturer’s option.
- Refund up to the full purchase price of the defective products.

THIS WARRANTY IS EXCLUSIVE. It covers the repair or replacement of defective materials only and does not cover labor costs unless professionally installed by a certified flooring installer. Installation of the replacement products will be at the original purchaser’s expense. If professionally installed, the manufacturer will pay the reasonable labor costs to perform the replacement or repair during the first five (5) years from the date of the original purchase. Any and all labor costs must be pre-approved by the manufacturer. In the event that the style installed in the home is no longer available, the manufacturer will replace the affected floor with another style of equal value. Under no circumstance will the value of a warranty claim exceed the original purchase price of the product.

THE ABOVE DESCRIBED REMEDY IS THE ORIGINAL PURCHASER’S SOLE AND EXCLUSIVE REMEDY FOR CLAIM UNDER THIS LIMITED WARRANTY.

CONDITIONS

Manufacturer will honor claims under this warranty only if all of the following conditions are satisfied:

- At all times between purchase and installation the flooring must be properly stored according to installation instructions.
- Interior residential construction ONLY.
- Only approved products for use over Radiant Heat.
- The flooring must be installed below grade, on grade or above grade according to the recommended installation instructions and adhesives.
- Environmental conditions below 35% RH or above 55% RH may result in cupping, delamination of veneer from core and may become unusable as a floor.
- Problems caused by failure of the homeowner or installer to evaluate the jobsite and jobsite conditions are not covered.
- This limited warranty applies only where the affected area of the flooring is visible and covers an area greater than 10% of the room.
- A description of the problem, photographs, and a sample that clearly shows the warranty problem must be presented to the retailer/distributor for presentation to the manufacturer.
- The covered person must provide valid proof of purchase for material and labor in the form of a sales receipt or invoice. This must show the date of purchase, original purchase price, and that he/she is the original purchaser
- Manufacturer must receive written notice within 30 days after discovery of any claimed defect or failure covered under this warranty, but within the time period applicable to the limited warranty.
- Manufacturer reserves the right to have a manufacturer’s designated representative or firm inspect and take samples of the hardwood floor for analysis.
- Manufacturer must be given 60 days following notice to inspect the product to confirm any failure.
- Inspections of the hardwood floors must be performed in accordance with industry standards from a standing position with normal lighting and no glare.
- Written notice and all photographs, samples and other documentation should be sent to the distributor/dealer from which the flooring was originally purchased.

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WARRANTY EXCLUSIONS

This limited warranty shall not apply to damage to the hardwood floor or to the finish arising from and specifically excluding any of the following:

- Natural wood characteristics such as mineral streaks, small knots, grain variations, etc., are normal and natural characteristics and shall not be construed as defects. No two pieces of wood are the same and color or other variations will occur. Manufacturer does not guarantee against natural variations, or the normal difference between color samples or photographs and colors of installed floors. New and/or replacement flooring may not match samples and/or existing flooring or warrant a color match to other wood products such as stairs, cabinets, trim, molding, etc.
- Squeaking and cracking of the hardwood by any cause other than mis-manufacturing is not considered a defect. This includes splitting or cupping resulting from exposure to improper environmental conditions.
- Hollow spots between the flooring and the sub floor.
- Expansion and contraction of the hardwood due to seasonal changes in climate shall not be considered defects.
- Natural color changes due to full or partial exposure to sunlight and weather. Maple, Merbau, Kempas, Pine, Cherry, and Exotic species such as Brazilian Cherry may darken or yellow due to light exposure over time. This is a natural occurrence and is not covered by this warranty.
- Indentations, scratches or damage caused by negligence, water, moisture and saturation, insects, insect infestation after the product has left the factory, animals, pebbles, grit, sand or other abrasives, and high heeled or spiked shoes, or failure to use pads under rolling chairs or other furniture.
- Failure to follow the manufacturer's written installation instructions including protecting the floor from sub floor moisture, storage and handling.
- Failure to follow the manufacturer's written installation instructions on approved adhesives. Damage caused by use of water based adhesive over sheet vapor retarders or sound insulation
- Excessive or inadequate humidity in the area. Relative humidity in the area of use must be within a normal range of 35-55%.
- Stains as a result of negligence, chemical or industrial products, wax, or oil soaps for cleaning, or standing liquid for a prolonged period of time.
- This warranty does not cover removal or replacement of cabinets, appliances, furniture, or other fixtures.
- Insufficient or improper protection, care or maintenance, or failure to use Manufacturer approved installation and maintenance products
- Damage from improper cleaning practices. Do not use steam mops or wet mops to clean your floors.
- Misuse or abuse
- Use of flooring for purposes other than for which it was designed.
- Improper alterations of original manufactured product. Alterations or repairs to the manufacturer's original product will void any and all warranties. This includes sanding, top coating, recoating or attempted re-finishing of the factory-applied finish.
- Gloss reduction is not considered surface wear through.
- Freight costs or expenses and any damage occurred during shipping.
- Failure due to structural changes in the sub floor, settling of the building or uneven sub floor that has not been adequately leveled.
- Accidents, negligence, abuse, or misuse. Warranty will be made void if man-made or natural disasters including leaking or broken plumbing, fire, flood, wind, lightening, earthquake, prolonged power outages, or standing water occur during or after installation.

WARRANTY DISCLAIMERS

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

THE MANUFACTURER DOES NOT GRANT TO ANY PERSON OR ENTITY THE AUTHORITY TO CREATE FOR IT ANY OBLIGATION OR LIABILITY IN CONNECTION WITH THE FLOORING.

MANUFACTURER SHALL NOT BE LIABLE FOR LOSS OF USE OR ANY OTHER INCIDENTAL, SPECIAL CONSEQUENTIAL COSTS, EXPENSES, LOSS OF INCOME OR PROFITS, OR OTHER SIMILAR DAMAGES INCURRED BY THE ORIGINAL PURCHASER.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO THE PURCHASER. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH MAY VARY, FROM STATE TO STATE.