

# Engineered Hardwood Flooring Installation Instructions

## Glue Down / Float

Engineered Planks can be installed over most subfloors, and are constructed to be dimensionally stable, making them suitable for installation over all grade levels. See all information and installation guidelines below.

### ATTN: INSTALLERS - CAUTION: WOOD DUST

Sawing, sanding and machining wood products can produce wood dust. Airborne wood dust can cause respiratory, skin and eye irritation. The International Agency for Research on Cancer (IARC) has classified wood dust as a nasal carcinogen in humans.

Precautionary Measures: Power tools should be equipped with a dust collector. If high dust levels are encountered use an appropriate NIOSH-designated dust mask. Avoid dust contact with skin and eyes.

First Aid Measures in case of irritations: Flush eyes and skin with water for at least 15 minutes.

### WARNING! DO NOT MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES.

These products may contain either asbestos fibers and/or crystalline silica. Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content and may govern the removal and disposal of material. See current edition of the Resilient Floor Covering Institute (RFCI) publication "Recommended Work Practices for Removal of Resilient Floor Coverings" for detailed information and instructions on removing all resilient covering structures.

### IMPORTANT HEALTH NOTICE:

THESE BUILDING MATERIALS EMIT FORMALDEHYDE. EYE, NOSE, AND THROAT IRRITATION, HEADACHE, NAUSEA AND A VARIETY OF ASTHMA-LIKE SYMPTOMS, INCLUDING SHORTNESS OF BREATH, HAVE BEEN REPORTED AS A RESULT OF FORMALDEHYDE EXPOSURE. ELDERLY PERSONS AND YOUNG CHILDREN, AS WELL AS ANYONE WITH A HISTORY OF ASTHMA, ALLERGIES, OR LUNG PROBLEMS, MAY BE AT GREATER RISK. RESEARCH IS CONTINUING ON THE POSSIBLE LONGTERM EFFECTS OF EXPOSURE TO FORMALDEHYDE.

REDUCED VENTILATION MAY ALLOW FORMALDEHYDE AND OTHER CONTAMINANTS TO ACCUMULATE IN THE INDOOR AIR. HIGH INDOOR TEMPERATURES AND HUMIDITY RAISE FORMALDEHYDE LEVELS. WHEN A HOME IS TO BE LOCATED IN AREAS SUBJECT TO EXTREME SUMMER TEMPERATURES, AN AIR-CONDITIONING SYSTEM CAN BE USED TO CONTROL INDOOR TEMPERATURE LEVELS, OTHER MEANS OF CONTROLLED MECHANICAL VENTILATION CAN BE USED TO REDUCE LEVELS OF FORMALDEHYDE AND OTHER INDOOR AIR CONTAMINANTS.

IF YOU HAVE ANY QUESTIONS REGARDING THE HEALTH EFFECTS OF FORMALDEHYDE, CONSULT YOUR DOCTOR OR CALL LOCAL HEALTH DEPARTMENT.

**ATTENTION: IT IS THE INSTALLER/OWNER'S RESPONSIBILITY TO** Inspect **ALL** materials carefully BEFORE installation. Wood is a natural product which has variations in color, tone and grain. Some variation in color is to be expected in a natural wood floor. Even though our product goes through many inspections before it leaves the factory, it is the customer and installer/owner's responsibility for final inspection prior to installation. The warranty DOES NOT cover materials with visible defects once they are installed.

The manufacturer will not be responsible for claims arising from flooring that has a greater range of grain/color variation than found in the showroom display samples.

### NECESSARY TOOLS

Basic tools and accessories: broom or vacuum, chalk line, tapping block, hammer, wood flooring surface cleaner, hand or electric jam saw, miter saw, moisture meter, safety glasses, straight edge, table saw, tape measure, square, utility knife, pry bar, T&G Glue (Floating- Only). **Use a non-water based wood flooring adhesive** and trowel, if using the glue down method.

**Caution:** Don't use a rubber mallet to engage the tongue and groove system. Use a tapping block instead. A rubber mallet hitting any finished surface will cause abrasive marks (dull spots) and chipped edges.

### JOBSITE CONDITIONS

Permanent HVAC should be on and operational for a minimum of 5 days prior to delivery, during and after installation of the flooring. The room temperature must be maintained 60 - 80° F, with relative humidity of 35 - 60%. These environmental conditions are specified as pre-installation requirements and must be maintained for the life of the engineered wood.

Basements and crawl spaces must be dry. Use of a 6mil black polyethylene membrane is required to cover 100% of the crawl space earth. Crawl space clearance from ground to underside of joist should be no less than 18" and perimeter vent spacing should be equal to 1.5% of the total square footage of the crawl space area in order to provide cross ventilation.

It is the responsibility of the installer/owner to determine if the job site subfloor and conditions are environmentally and structurally acceptable for wood floor installation. The manufacturer declines any responsibility for wood failure resulting from or connected with subfloors, subsurface, job site damage or deficiencies after hardwood flooring has been installed.

### SUBFLOOR PREPARATION AND RECOMMENDATIONS FOR ALL INSTALLATIONS

#### Concrete Subfloors

New concrete slabs require a minimum of 60 days drying time before covering them with a wood floor.

Concrete subfloors must be dry, smooth (level within 3/16" in a 10' radius 1/8" in 6') and free of structural defects. Hand scrape or sand with a 20-grit #3-1/2" open face paper to remove loose, flaky concrete. Grind high spots in concrete and fill low spots with a Portland based leveling compound (min. 3,000 psi). Concrete must be free of paint, oil, existing adhesives, wax, grease, dirt and curing compounds. These may be removed mechanically but **DO NOT** use solvent-based strippers under any circumstances. The use of residual solvents can prohibit the satisfactory bond of flooring adhesives. It is important to ensure a proper bond between the adhesive and the concrete, and planks or strips. Engineered hardwood flooring may be installed on-grade, above grade, as well as below grade where moisture conditions are acceptable.

### Lightweight Concrete (Floating installation only)

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

**To ensure a long lasting bond, make sure that the perimeter of the foundation has adequate drainage and vapor barrier.**

### Wood Subfloors

#### Solid Wood Subfloors (Direct Glue or Floating)

Must be minimum 3/4" (19mm) thick with a maximum width of 6" installed at 45° angle to the floor joists.

For direct glue-down applications add 3/8" (9.5mm) approved floor panel underlayment.

#### Existing Wood Flooring (Direct Glue or Floating)

Existing engineered flooring must be well bonded / fastened. When gluing over existing wood flooring, the surface finish must be abraded or removed to allow adequate adhesive bond.

Existing solid hardwood flooring that exceeds 6" in width must be covered with 3/8" (9.5mm) approved underlayment and fastened as required. **Do not install over solid hardwood that has been attached directly to concrete.**

Wood subfloors must be well nailed or secured with screws. Nails should be ring shanks and screws need to be counter sunk. The wood subfloor needs to be structurally sound and dry. It should not exceed 12% moisture prior to installation. If the subfloor is single layer, less than 3/4" thick, add a single cross layer for strength and stability (minimum 3/8" thick for a total 1 1/8" thickness). When installing over existing wood flooring, install at right angles to the existing floor.

#### Approved Underlayment Floor Panels

**Plywood:** Must be minimum CDX grade (exposure 1) and meet US Voluntary Product Standard PS1 performance standard or Canadian performance standard CAN/CSA0325-0-92. The preferred thickness is 3/4" (19mm) as a subfloor [minimum 5/8" (16mm)] or 3/8" (9.5mm) as a floor panel underlayment.

**Oriented Strand Board (OSB):** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92 construction sheathing. Check underside of panels for codes. When used as a subfloor, the panels must be tongue and groove and installed sealed side down. Minimum thickness to be 23/32" (18 mm) thick when used as a subfloor or 3/8" (9.5mm) as floor panel underlayment.

**Wafer board / Chipboard:** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92. Must be 3/4" (19mm) thick when used as a subfloor and 3/8" (9.5mm) thick when used as floor panel underlayment.

**Particleboard:** Must be minimum 40-lb. density, stamped underlayment grade 3/4" (19mm) thick. **(Floating Installation Only)**

Wood subfloors must be free of paint, oil, existing adhesives, wax, grease, dirt, urethane, varnish, etc.

### Subfloors other than Wood or Concrete

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

Terrazzo, Vinyl, Resilient Tile, Cork or other hard surfaces that are dry, structurally sound and level, as described above, are suitable as a subfloor for installation of engineered hardwood flooring. Terrazzo and ceramic tile must be scuffed to assure adhesion.

**Warning!** Do not sand existing resilient tile, sheet flooring, and 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.

### Subfloor Moisture Check

Engineered hardwood flooring may be used for above-, on-, and below-grade applications. On all common substrates, on- and below-grade applications are susceptible to moisture and should be tested for moisture prior to installation in several locations within the installation area. Acceptable conditions for above-, on-, and below- grade applications are:

- Less than 3 lbs. /1000 SF / 24 hrs. on a calcium chloride test
- No greater than 4% on a Tramex Concrete Moisture Encounter Meter or equivalent electronic concrete moisture meter
- Wood substrates must have a moisture reading of no more than 12% when using an electronic pin type wood moisture meter. The difference between the moisture content of the wood subfloor and the hardwood flooring must not exceed 4%.

### DO NOT INSTALL FLOORING IF MOISTURE TESTS EXCEED LIMITS NOTED ABOVE

Appropriate actions must be taken to reduce subfloor moisture. Steps could include waiting until the subfloor dries to meet specifications or use of an appropriate moisture barrier.

### RADIANT HEATED (HYDRONIC) SUBFLOORS (FLOATING INSTALLATION RECOMMENDED) SEE APPROVED WOOD SPECIES BELOW.

#### APPROVED WOOD SPECIES: W. OAK / R. OAK / MAPLE / WALNUT

Prior to the installation of engineered hardwood flooring over a radiant heated flooring system the following guidelines must be followed in order to prevent unsatisfactory results for the flooring:

Previously noted concrete subfloor requirements apply.

It is highly recommended that the radiant heat system be designed to accept an engineered wood floor.

The floating installation method is recommended. Glue down is acceptable, if adhesive manufacturer will warranty the installation over hydronic radiant heated subfloor.

Relative humidity of the jobsite must be maintained between 35 - 60%. Use of a humidification system may be required to maintain the proper humidity level. Failure to maintain the humidity range noted can result in excessive drying of the flooring which may lead to surface checking.

The radiant heat system should be set to run at 2/3 maximum output for a minimum of 2 weeks prior to installation of flooring to further allow moisture dissipation from the concrete slab. This must be done in both warm and cold seasons.

Before installation (5 days) reduce the temperature to 65° F and maintain temperature range of 64 - 68° F during the installation. If gluing down, check adhesive manufacturer guidelines prior to installation.

After completion of the installation, wait 48 hours and then gradually raise the temperature of the heating system 2 - 3° F per day over a five day period until the preferred setting is reached.

#### CAUTION: THE FLOOR SURFACE MUST NEVER EXCEED 80° F IN TEMPERATURE.

Use of an in floor temperature sensor, as well as a separate outdoor thermostat, is recommended.

Room temperature should not vary more than 15° F from season to season.

Seasonal gapping should be expected.

### PREPARATION

Remove all moldings and wall-base, and undercut all door casings with a hand or power jam saw using a scrap piece of flooring as a guide.

#### Racking the Floor

Regardless of the installation method chosen to install the floor, start by using random length planks from the carton or by cutting four to five planks in random lengths. End joints on adjoining rows should be offset by no less than 6" within the first three rows. The remaining rows should be random throughout, while making adjustments for undesirable end joint patterns. Never waste material; use the leftover pieces from the fill cuts to start the next row or to complete a row.

**Note: When installing a pre-finished wood floor be sure to blend the wood from several cartons to ensure a good grain and shading mixture throughout the installation.**

Randomly install different lengths to avoid a patterned appearance. Try to maintain a 5 - 6" minimum between end joints.

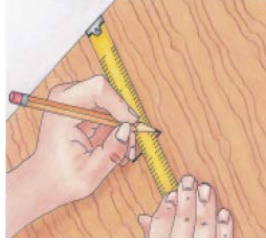
## GLUE DOWN INSTALLATION

There are two ways to install when using a wood flooring adhesive (wet lay; meaning to lay directly into wet adhesive and dry-lay method; meaning to allow the adhesive to flash or to tack up.) **Use a non-water based wood flooring adhesive.**

**Caution:** Whether you choose to install using the dry or wet method, follow all guidelines set by the adhesive manufacturer and the instructions below. By not adhering to the guidelines the warranty on the floor can be voided.

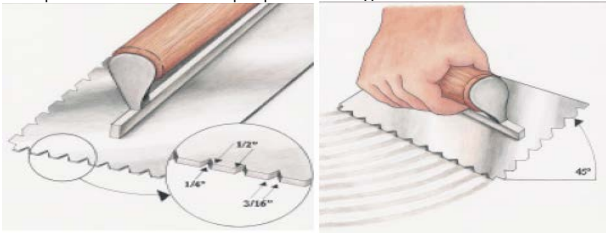
### Wet Lay Method - Step 1

Select a starter wall. It is recommended to start the installation along an exterior wall because it's more likely to be straight and square with the room. Measure out from the wall the width of two planks and mark each end of the room and snap your chalk line.



### Wet Lay Method - Step 2

Spread the wood flooring adhesive from the chalk line to the starter wall using the recommended trowel size specified by the glue manufacturer. It is important to use the correct trowel at a 45° angle to get the correct spread of adhesive applied to the subfloor, which will produce a proper and permanent bond. Improper bonding can cause loose or hollow spots.



**Note:** Change the trowel every 2,000 to 3,000 SF due to wear down of the notches. This assures the proper spread of adhesive.

### Step 3

Install the first row of starter planks with the tongue facing the starter wall and secure into position. Alignment is critical and can be achieved by securing a straight edge along the chalk line (2x4's work well), or by top nailing the first row with finishing nails (wood subfloor), or adjustable spacers (concrete subfloor). This prevents slippage of the planks that can cause misalignment.

**Note:** The planks along the wall may have to be scribed and cut to fit in order to maintain a consistent expansion space since most walls are not straight.

### Step 4

Once the starter rows are secure, spread 2 1/2" to 3 feet of adhesive the length of the room. (Never lay more adhesive than can be covered in approximately 2 hrs.) Place tongue into groove of plank and press firmly into adhesive; never slide planks through adhesive. (**Note:** Do not use a rubber mallet to butt the ends of the material together as it can burnish the finish and cause marring). Use a tapping block to fit planks snugly together at side and butt ends.

Clean any adhesive off the surface before it cures using clean terry cloth towels, mineral spirits or adhesive manufacturer's glue removal product.

Use straps to hold planks securely in place as you are installing and continue the process throughout the installation.

**Note:** Never work on top of the flooring when installing with the wet lay method.

### Dry Lay Method - Step 1

Start by selecting your starter wall and measure out from the wall the width of two planks; mark each end of the room and snap your chalk line.

### Dry Lay Method - Step 2

Apply adhesive from the chalk line out 2 1/2 to 3 feet. Allow adhesive to flash as per the instructions affixed to the adhesive container.

**Note:** Variations in humidity may affect the flash times. Check adhesive specifications for additional information.

Secure your starter rows with a straight edge (2x4's). Install planks and fasten with straps as you continue throughout your installation. If you must work on top of the newly laid flooring use a kneeling board.

Once the remainder of the floor has been installed, go back to the beginning and remove the straight edges and spread adhesive on the remainder of the open subfloor. Allow to flash for the appropriate time and lay flooring as instructed. Remember that the planks closest to the wall may have to be scribed and cut to fit due to irregularities along the wall. Roll the floor per adhesive manufacturer's recommendations.

### Clean Up

Use clean white terry cloth towels to clean as you go along with mineral spirits. Both are easy and convenient to use. Adhesive that has cured on the surface of the flooring can be difficult to remove and will require the use of a urethane remover. Use a product that has been recommended by the adhesive manufacturer and is safe for the finish of your pre-finished engineered hardwood floor.

Light foot traffic is allowed after 12 hours but wait 24 hours after installation to remove straps or edge spacers.

## FLOATING INSTALLATION

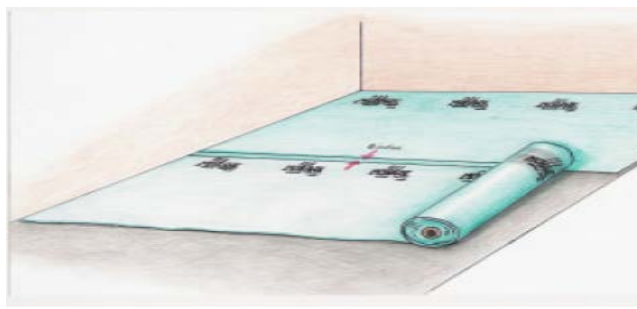
### Subfloor Preparation:

Preparation of a subfloor is more critical for a floating engineered floor than for a glue down application. The floor must be flat to 3/16" in a 10' radius. If the floor requires correction, the high areas can be ground down and the low areas may be filled by floating latex fortified Portland leveling compound. The leveling compound must be allowed to dry according to the manufacturers instructions before the floor is installed over it. The use of sand or extra padding to fill low areas is not acceptable.

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

### Floating Floor Underlayment

Floating installation requires the use of a 2in1 foam underlayment with an attached 6 Mil polyethylene, designed for engineered hardwood floating floors. Must have a minimum thickness of 1/8" and a 2.0# density. Underlayment requirements are very critical in a floating installation. Excessive pad compression or compaction is a common cause of seam failure.



### Floating Floor Expansion Space:

An expansion space of at least 1/2" must be maintained around the perimeter of the room, all pipes, counters, cabinets, fireplace hearths, doorframes and any other fixed vertical objects in the room.

### Floating Floor Glue and Glue Placement:

Use recommended floating floor glue for use with engineered hardwood floors for installation. Glue placement is very important. The glue must be placed along the topside of the groove the full length of the grooved side and end. This can be accomplished by inverting the plank and applying a bead of glue (3/32") to the topside of the groove (side of the groove nearest the face of the plank). When the plank is turned back over the glue will run down the back of the groove giving total coverage. Apply only a 3/32" bead of glue; if the groove is filled with glue it will be difficult to close the seam will not allowing a tight fit.



### Getting Started

Remove all moldings / wall-base and undercut door casings.

After determining the direction to run the planks (should run parallel to the longest wall in the room), measure the width of the room. The last row of flooring should be no less than 1 1/2" wide. If the board measures less, cut the width of the starter row accordingly.

Select a starter wall. Measure out from the wall at each end, the overall width of the plank plus 1/2" for expansion. If the first row requires cutting, then proceed to measure from the wall the width of the ripped board plus the 1/2" for expansion.

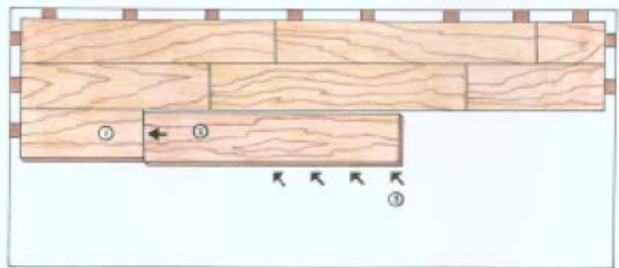
Snap a chalk line from these points.

Install underlayment. Seal seams with a clear plastic tape. Allow the poly to run 2" up the wall and trim back after installation.

Prior to installing the flooring, secure a straight edge (starter board) inside the chalk line to act as a guide and to prevent the row of planks from shifting during installation. Insert spacers at the wall to maintain the 1/2" expansion space between the flooring and the wall.

### Installing the Floor

The installation begins in the left hand corner of the room, moving to the right. The groove side of the board must be facing the wall, thereby leaving the tongue exposed. Install the first three rows of flooring, with a minimum of 16" between end joints. Maintain end joints of at least 5" - 8" on all remaining rows. Tap boards together with a hammer and tapping block against the tongue side only. Spacers must be used to establish the minimum 1/2" expansion space from the walls. Place spacers against the wall every 2 - 3" and at each plank end joint connection. The three rows must be straight, square and in rack because they establish the alignment for the rest of the floor. After putting these three rows together, allow the glue to set (15 to 45 minutes) before proceeding with the installation. With the tongue facing out, the planks can be tapped together with a tapping block on the tongue to make a snug fit. After installing 8 or 10 rows of flooring, stand back and check for crowning or heaving due to tension strapping or any damage caused by improper tapping.



### CLEAN AS YOU GO

If any glue squeezes out of the seam between the planks, wipe away with a damp cloth immediately, as dried glue is more difficult to remove. If glue has dried, then lightly scrape it away with a plastic scraper or other method recommended by the glue manufacturer.

### Floating Floor Final Touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps due to irregularities.

Complete the job by using wood filler that coordinates with the installed engineered flooring to fill any gapping along the joints or areas where brad nails were used in the trim or the flooring. Clean the finished floor with cleaner specifically designed for use with urethane coated wood floors.

## MAINTENANCE

Engineered Hardwood Floors are very easily maintained. No wax, no mess. Simply apply a cleaner made for use with urethane coated hardwood floors and a terry cloth flooring mop.

**STEP ONE:** Sweep your floor to remove any particles that could scratch your floor.

**Warning:** Vacuums with a beater bar or power rotary brush head can damage a wood floor and never should be used.

**STEP TWO:** Apply hardwood surface cleaner directly to the terry cloth flooring mop, instead of the floor!

**STEP THREE:** Use a back and forth motion with the mop. When the terry cloth cover becomes soiled, simply replace it with a clean one. Cleaning the floor with a soiled cover could cause streaking. The covers are re-usable, so wash and dry the covers periodically as you would a normal towel.

### Tips & Warnings:

**Maintain a normal indoor relative humidity level (35 – 60 %) throughout the year to minimize the natural expansion and contraction of the wood.**

**I. Heating Season (Dry):** A humidifier is recommended to prevent excess shrinkage due to low humidity levels. Wood stoves and electric heat tend to create very dry conditions.

**II. Non Heating Season (Wet):** An air conditioner, dehumidifier, or periodically turning on your heating will help to maintain humidity levels during summer months. Maintain temperature range between 60 - 80° F.

- Sweep regularly.
- Remove spills promptly using wood flooring cleaner and a clean white cloth.
- Use felt protectors under heavy pieces of furniture and chairs.
- Use protective mats at all exterior entrances.
- Spiked heels or shoes in need of repair can severely damage your floor.
- Never wet or damp mop your wood floors. Water can cause damage to wood flooring.
- Never use oil soaps, wax, abrasive cleaners, steel wool or strong ammoniated or chlorinated type products to clean your floor.
- The sun's UV rays can change the color of your floor.
- Keep animal nails trimmed.
- Protect your floor with a 1/4" piece of plywood or Masonite when using a dolly for moving furniture or appliances. **Never slide or roll heavy furniture or appliances across the floor.**
- If your floor becomes scratched or dull, repairs can often be made using repair accessories.