Engineered Hardwood Installation Guide

Pre-finished Engineered flooring, when properly installed, is a beautiful durable floor-covering material that can be installed over most properly prepared subfloors and are engineered to be dimensionally stable, making them suitable for installation on all grade levels where moisture conditions do not exist. The installer must be careful to protect the flooring material from gaining moisture before, during, and after the installation of the product. This installation manual is intended to help the installer produce a trouble-free floor. **Should any of the hardwood flooring be questionable as to the suitability for the job because of perceived manufacture or factory finish, the installer should not use that flooring.**

⚠ **WARNING:** Drilling, sawing, sanding, or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.Ca.gov

WARNING! DO NOT MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUT-BACK" ADHESIVES OR OTHER ADHESIVES. PREVIOUSLY INSTALLED RESILIENT FLOORING PRODUCTS AND THE ASPHALTIC OR CUTBACK ADHESIVES USED TO INSTALL THEM MAY CONTAIN EITHER ASBESTOS FIBERS OR CRYSTALLINE SILICA. THE PRODUCTS IN THIS CARTON DO NOT CONTAIN ASBESTOS 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 ABSOLUTELY CERTAIN THAT THE PRODUCT IS 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. ALWAYS USE SAFETY GLASSES AND WEAR A MASK WHEN USING WOOD OR WOOD COMPOSITE PRODUCTS.

IMPORTANT HEALTH NOTICE FOR MINNESOTA RESIDENTS ONLY: 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 people 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 long-term 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. Homes located in an area 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 your local health department.

Installer/Owner Responsibility:

It is the responsibility of the installer/owner to ensure that job site environmental, subfloor and subsurface conditions involved meet or exceed all requirements as outlined in installation instructions prior to installation. Manufacturer declines all responsibility for product performance or installation failure due to subfloor, substrate or environmental deficiencies or jobsite conditions. The building must be enclosed and dried out before the installation of the flooring. Proper moisture tests must be performed.

All wood continually expands and contracts until it reaches moisture equilibrium with the environment in which it's installed. As with all wood flooring, expansion and contraction will be minimized if the interior relative humidity is consistently maintained year-round. Humidification and/or dehumidification systems may be necessary to maintain your home environment to prescribed relative humidity conditions. The flooring should be delivered to the jobsite at least 72 hours prior to installation and acclimation for 3 to 5 days may be required based upon local climatic conditions. The boxes should be opened, and the flooring should be laid out in the room and stacked with at least a 4-inch airspace under the cartons. Remove all plastic wrap that may have been used to ship the material. The heating or air conditioning must be turned on and operating at normal levels so the boards can acclimate to their environment. Do not unload the flooring during wet conditions. Moisture absorbed by the flooring will cause swelling, and if installed before acclimation may subsequently shrink back to their in-service moisture content. This shrinkage may produce gaps which are a natural occurrence. Do not install wood flooring until appropriate temperature and humidity conditions have been achieved. The purpose of acclimation is to allow the moisture content of the wood to adjust to "normal living conditions" at the site; these are the temperature and humidity conditions that will typically be experienced once the structure is occupied.

The owner/installer assumes all responsibility for final inspection of product quality. Wood is a natural product that can vary in color, grain, and contains natural characteristics that vary from plank to plank and is to be expected. We do not warrant against these natural variations from plank to plank or variations from sample to plank. Material is manufactured in accordance with industry standards which allows manufacturing and natural deficiency tolerances up to 5% of total installation.

Installer should work out of four to five boxes (minimum of 3) at a time to ensure a beautiful blend of shading. Most of the material should be spread out to compare shades and create a pattern that will enhance these variations in the finished floor. Warranties do not cover color variation, so staggering boards with color differences throughout the floor is important. Carefully inspect all material prior to installation for defects.

Materials installed with visible defects are not covered under warranty. Cull out and do not install undesirable pieces. Installation is acceptance of product quality. Southwind does not accept responsibility for any costs incurred when plank(s) with visible defects have been permanently installed.

All "wet" work- i.e. - paint, drywall, concrete, masonry, plumbing must be complete and dry well in advance of delivery of wood flooring. Gutters and downspouts should be in place and the exterior grade complete to allow for proper drainage of water away from the building's exterior perimeter. Exterior doors and windows installed. Precautions should be taken to protect the floors from other trade work. See **Floor Protection During Construction** section on page 9.

The pre-finished flooring should be installed in a manner like that used by other types of hardwood flooring products. Make sure there is adequate light during the installation. This will allow any obvious defects in a plank to be easily noticed. **Always** allow expansion space around the perimeter of the room and should be the thickness of the product being installed. Expansion space is required when a vertical obstruction such as a fireplace or posts, etc. are parallel in the direction of the flooring.

Permanent HVAC should be on and operational for a minimum of 5 days and maintained between 65° and 75°F with a relative humidity of 35% to 55% prior to delivery, during and after installation of the flooring for the life of the product. If HVAC is not possible at time of installation, the environmental conditions must be at or near normal living conditions between 60° and 80°F and at the average yearly relative humidity for the area.

Building interiors are affected by two distinct humidity seasons—heating and non-heating. **Heating season, low humidity, dry**- All heating methods create dry, low-humidity conditions. Humidifiers are recommended to prevent excessive shrinkage or permanent gapping in wood floors due to seasonal periods of low humidity. **Non-heating season and coastal or waterfront areas, high humidity, wet**- During the non-heating season or in areas with high humidity year-round, proper humidity levels should be maintained using an air conditioner or dehumidifier.

Southwind warranties do not cover natural expansion and contraction that results in separation between planks, or damage caused by excessively low or high humidity. Seasonal gapping is not considered a manufacturing defect. Purchase an additional 5% of flooring to allow for cuts and an additional 10% if installed diagonally. Installer should leave any excess material with the homeowner to include carton end labels of product installed along with pre-installation moisture content readings for warranty purposes. Homeowners should store excess material in a climate-controlled area for any needed repairs. Use of stain/fillers/putty for correction are considered normal practice of installation and for touch ups over the life of product.

Southwind does not recommend installing flooring under cabinets or other permanent fixtures. If islands, cabinets, or other permanent fixtures are installed on top of the flooring, it could cause gapping in the floor planks.

Basic Tools Needed for all Installation Types:

****See Each Install Method for Additional Tools Needed for Floating, Glue Down, or Staple/Nail ****

•Safety glasses • Wood pin moisture meter • Concrete in-situ moisture meter • Chalk line & chalk • Tape measure• Jamb saw • Table saw • Pry Bar • Coordinating stain, filler, or putty • Mineral spirits (odorless) • Thick felt protectors • Putty knife • Broom or vacuum • Pencil • Miter saw • Utility knife • Plastic scraper • Clean white cloths or towels • Pull bar • Carpenters square •NIOSH-designated dust mask • Two headed flooring mallet • Tapping block • Coordinating transition strips or moldings • Straight edge • Bona hardwood cleaner

Subfloor Requirements on Above or Below Grade:

These recommendations are not intended to supersede federal, state, or local building codes, but as with many other interior finish products, may require modifying existing structural components for a successful installation. Hardwood flooring is not a structural component. The product warranty does not protect against loss caused by inadequate subfloors, flooring substructures or improper installation of said substructures.

Subfloors must be clean and free of dirt, curing compounds, sealers, drywall mud, paint, wax, grease, urethane, or other materials that may affect the integrity of the flooring material or adhesives used to install the flooring.

All subfloors and subfloor systems must be structurally sound and must be installed following their manufacturer's recommendations. Local building codes may only establish minimum requirements of the flooring system and may not provide adequate rigidity and support for proper installation and performance of an engineered wood floor. Whenever possible install the planks perpendicular to the floor joists for maximum stability. Our warranties **DO NOT** cover any problems caused by inadequate substructures or improper installation of said substructures. The subfloor must be flat within 3/16 inch in 10-foot radius (5 mm in 3 m) and/or 1/8 inch in 6-foot radius (3 mm in 2 m). Sand high areas or joints. Fill low areas with a high compressive strength (min. 3,000 psi) Portland cement-based compound.

To reduce the risk of moisture-related failures, the subfloor and wood flooring must be of similar moisture content. Test the subfloor by taking a minimum of 20 moisture content readings per 1,000 square feet of subfloor using a pin type moisture meter. Average these readings and include on the data sheet on **page 10** of these instructions. Likewise check the wood flooring moisture content and record on the same sheet. These moisture readings are to be left as a permanent record of testing with the homeowner. When both the subfloor and flooring are below 12% moisture content and the flooring is within 4% of the subfloor moisture, the product can be installed. The moisture content for concrete subfloors registered after a calcium chloride test (ASTM F1869) should not be greater than 5 pounds per 1,000 square feet of area. Do not install the floor until these moisture conditions are met.

Structurally sound concrete subfloor: Concrete substrate should be at least 60 days old and constructed in accordance with ASTM E1745. Grind high spots or use a Portland cement based leveling material (minimum compressive strength 3000 psi) to fill all low spots. Follow the leveling compound manufacturer's instruction. Leveling compounds must be allowed to thoroughly cure and dry prior to installation of wood flooring.

Basements and crawl spaces must be dry. Use of a 6-mil black polyethylene is required to cover 100% of the crawl space earth. Crawl space clearance from ground to underside of joist to 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 to provide cross ventilation (See diagram 1). To increase reliability, appropriate subfloor moisture testing should be performed after the HVAC system has been in operation for a minimum of 5 days. Excess moisture on any flooring substrate, if not identified and corrected prior to installation, will cause floor covering failure. Southwind warranties do not cover any problems due to moisture levels that exceed these guidelines.

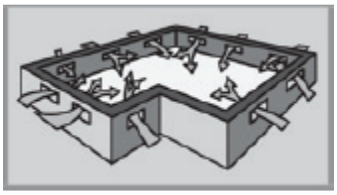

Diagram # 1

Structurally sound wood subfloor: Nail or screw any areas that are loose or squeak. Vertical deflection must not exceed 3/16 inch. Wood panels should exhibit an adequate fastening pattern, glued, screwed, or nailed as system requires, using an acceptable nailing pattern, typically 6 inches (15 cm) along bearing edges and 12 inches (31 cm) along intermediate supports. Flatten edge swell as necessary. Replace any water damaged, swollen or delaminated subflooring or underlayment. Building codes establish requirements for structural support components of flooring systems which may not provide adequate rigidity and support for proper installation and performance of a hardwood floor. Whenever possible, install flooring perpendicular to the floor joists for maximum stability.
NOTE: When joist spacing exceeds the traditional 16 inches on center, manufacturer recommends you apply a thin bead of Performance Accessories Tongue & Groove D3 glue to the bottom side of the groove to lock the tongue and groove profile in place. This will reduce the potential for movement of the tongue and groove, which may contribute to squeaking or popping. When using this method of installation, you may continue to choose to staple or nail down the hardwood depending on your preference. Using a D3 tongue and groove glue with the staple reduces movement as the subfloor deflects. For installation over joist spans greater than 24 inches on center, consult NWFA for panel thickness guidance.
Burnished or steel troweled concrete substrates must be inspected for porosity by placing a few drops of water on the surface. If the water is not absorbed within 3 minutes, the substrate should be considered non- porous. Abrade the surface with 30-grit sandpaper until porosity is achieved. After abrading, remove all debris before proceeding with installation. Glue-down floors may be applied to concrete with a rating of 3,000 psi or greater. Glue-down application over lightweight concrete (less than 3,000 psi) is not permissible.

Wood Subfloors: Approved subfloor panels should meet or exceed the following guidelines:
Plywood: Must be minimum CDX EXP 1 grade and conform to U.S. Voluntary Product Standard PS1 performance standard or Canadian performance standard CAN/CSA 0325-0-92.
Oriented: Strand board (OSB) must conform to U.S. Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92. The panels must be tongue and groove and installed sealed side down.
Particleboard: Must be a minimum 40-lb density, stamped underlayment grade and 3/4 inch (19 mm) thick. **(Floating installation only.)**

Solid Wood Subfloor- Direct Glue or Staple Down Application:
Minimum 3/4 inch (19 mm) thick with a maximum width of 6-inch (15 cm) installed at a 45° angle to the floor joists.
Group 1 dense softwood (pine, larch, Douglas fir, etc.) No. 2 common, kiln dried with all board ends bearing on joists.
For direct glue down applications add 3/8-inch (9.5 mm) approved floor panel underlayment.

Existing Wood Flooring- Direct Glue or Staple Down Application:
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-inch (15 mm) in width must be covered with 3/8-inch (9.5 mm) approved underlayment and fastened as required.
Do not install over solid or engineered flooring attached directly to concrete. Instead remove existing wood flooring and follow instructions for installation over concrete.

Wood subfloors should be well nailed or secured with screws. Nails should be ring shank and screws need to be counter sunk. The wood subfloor must be structurally sound, without loose boards, vinyl, or tile. If subfloor panels are a single layer, less than 3/4-inch thick, add another single cross layer for strength and stability, minimum 3/8-inch.

Underlayment floor panels must be installed sealed side down. When used as a subfloor, allow 1/8-inch (3.2 mm) expansion space between each panel. If spacing is inadequate, cut in with a circular saw. Do not cut expansion space on tongue and groove panels. When installing parallel to the floor joists, it may be necessary to increase rigidity of the structural subfloor system by installing an additional minimum of 3/8-inch (9.5 mm) approved underlayment floor panel. Avoid subfloors with excessive vertical movement no more than 3/16-inch (4.7mm) deflection. If the subfloor exhibits excessive vertical movement (deflection) before installation of the flooring, it will likely do so after installation of the flooring is complete. Indications of excessive deflection are uneven finish wear, fastener release, squeaking, compromised or damaged locking systems, sectional contours such as bowing or dipping in floors and uneven flooring material.

Lightweight concrete: Engineered wood flooring is not recommended for glue down installation over lightweight concrete subfloors. To test for lightweight or acoustical concrete, scrape a coin or key across the surface of the subfloor. If the surface powders easily or has a dry density of l00 pounds or less per cubic foot, the engineered flooring should not be installed using the glue down method. Product can be installed using floating installation method. For leveling and repair of lightweight concrete, contact the lightweight concrete manufacturer to ensure correct methods are used.

Ceramic Tile and Terrazzo: All wax and sealers must be removed with an appropriate cleaner/stripper. Ceramic tile and terrazzo should be abraded to allow for proper adhesion. Check for loose tiles by tapping and re-adhere. Fill grout lines with a cementitious latex fortified leveling compound.

Resilient tile, resilient sheet vinyl: Material must be fully spread and secured to the subfloor. Do not install over more than one layer that exceeds 1/8" in thickness. Do not install over perimeter glued resilient vinyl. Rubber tiles are an unacceptable underlayment that must be removed.

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.

Nail/ Staple Down Only: If old flooring is unsuitable to install new flooring, then overlay with new underlayment. Test to conclude that the staples/cleats can properly penetrate and secure the flooring to the subfloor.

Glue Down Only: Do not install over more than one layer that exceeds 1/8" in thickness. Clean flooring with an appropriate cleaner and allow to thoroughly dry. If necessary degloss the floor using an abrasive pad to enhance the bonding of the adhesive, if wax or other coatings are present, completely remove the material with a quality stripper, rinse the floor and allow to dry. Always check for proper adhesion bond prior to installing.

Acoustic Cork Underlayment: (Glue Down Only) Install the cork underlayment according to the manufacturer's instructions. The cork underlayment must be fully adhered to the subfloor. The cork underlayment should be of pure granulated cork combined with a polyurethane binder with a minimum density of 11.4 lbs. per cubic foot and not to exceed 13 lbs. per cubic foot.

Direct glue installation: Make sure the floor covering materials are well bonded to the subfloor or underlayment with full spread adhesive and no more than two layers thick, not to exceed 3/16-inch (4.7 mm). With approved wood or wood composite subfloors, if vinyl or tiles are loose, broken or in poor condition, install a 3/8-inch (9.5 mm) approved subfloor panel directly over the flooring materials. Clean the flooring materials as necessary to remove waxes, sealers, or cleaning residues to allow a good adhesive bond. Cork floor sealers and surface treatments must be removed. Always perform a bond test prior to beginning direct glue installation.

Before you Start Any Installation Method: Correct any subfloor conditions concerning moisture, either wait until the subfloor dries to meet specifications or use an appropriate moisture barrier. Do Not install flooring if moisture tests results exceed recommended limits.

Adhesive Selection: Premium Engineered Wood Flooring adhesive or Premium urethane adhesive will vary depending on the subfloor moisture condition. Follow adhesive manufacturer's instructions on recommended trowel size.

Shade Variations/Blending of Cartons: The pre-finished flooring, like any natural product, will show variations between boards or box to box. When installing the floor, the installer should adjust for these variations. It is important to work out of four to five boxes at a time to ensure a beautiful blend of shading. Most of the material should be spread out to compare shades and create a pattern that will enhance these variations in the finished floor. Warranties do not cover color variation, so staggering boards with color differences throughout the floor is important.

Match Transition Moldings: For the best appearance blend all transitions and moldings to planks with similar color and graining. Set them aside for use as needed. Remove any existing base or quarter round.

Layout of Flooring: "Racking the Floor" is essential to achieve a random appearance. Start by either using random-length planks found in the carton or by cutting four-five planks in random lengths, differing by at least six inches to use at opposite of room to complete rows or start new row. As you continue working across the floor try to maintain a six-inch minimum between end joints. Randomly install different lengths to avoid a patterned appearance. Never waste materials; the end cuts from starter rows should be used at the opposite side of the room to complete rows or used to start the next row. Staggering of end joints at minimum 6-inch or longer for wider width is required.

Undercut Door Casings:
Undercut all door casings 1/16-inch higher than the thickness of the flooring materials to be installed. Use a scrap piece of flooring as a guide. Lay the scrap on the substrate and cut the casing with a handsaw or use a power jamb saw set at the correct height. Remove all moldings and wall base and undercut all door casings.

Expansion Space: Expansion space around the perimeter is required and should be equal to the thickness of the flooring material.

Radiant Heated Subfloors:
Southwind engineered flooring can be used in combination with many types of in-floor heating. The heating system can be cast in a concrete floor or in a thin layer of filler on the surface of a concrete subfloor. It can also be installed under a wood subfloor or installed on the surface of the subfloor as an electrical matting, provided it meets the floor flatness requirements.
Prior to installation of flooring over a radiant heat system it is important that the guidelines are followed in strict accordance. Failure to follow the manufacturer's guidelines may produce unsatisfactory results.
Floating installation methods only, direct glue down is NOT RECOMMENDED.
Subfloor must be flat to 3/16" in 10' or 1/8" in 6'.
Relative humidity of the jobsite must be maintained between 35-55% relative humidity. Use of humidification system may be required to maintain the proper humidity level. Failure to maintain proper humidity level can result in excessive dryness of flooring.
It is highly recommended that the radiant heat system be designed specifically to accept a wood floor.
Use of an in-floor temperature sensor as well as a separate thermostat for the individual room is required.
An outdoor temperature sensor should be used to adjust water temperature according to anticipated heat loss.

Radiant Heat subfloor jobsite requirements:
Before floating installation of flooring material, the follow conditions are required:
Moisture content of concrete (lightweight concrete) must not exceed 2.0 lbs per CaCl test method (ASTM1869-89) Wood sub floors not to exceed 13% and be within 4% of the wood flooring. If it exceeds these limits, DO NOT install the flooring.
Concrete must be allowed to properly cure and dry a minimum of 4 weeks prior to operation of radiant heat system.
The operation of 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 from concrete to dissipate and reach a final moisture content. This must be done in both heating and non-heating seasons. Prior to installation (4 days) reduce to a temperature of 65°.
Install flooring according to floating floor installation guidelines. Use of a 2 **in 1** underlayment is required.
When gluing planks run a continuous bead of adhesive in the groove on both the end and length of the board. Remove any excess glue that squeezes out onto surface of the planks with a clean damp rag. Change rags and water periodically to avoid leaving haze on surface.

After Installation & Seasonal Operation:
48 hours after completion of installation, slowly raise temperature of the heating system to its preferred operating level over a period of 5 days. **Do not allow the surface temperature to exceed 82°.** The humidity level must be maintained between 35%-55% R.H.
Seasonal gapping should be expected. Surface checking can be expected if the proper humidity level is not properly maintained between 35-55% R.H. or if the floor's surface temperature exceeds 82°.

Glue-Down Installation for Engineered Flooring

Before you begin using the following instructions, please refer to the Pre-installation and Job Site Conditions.
Additional Tools Needed for Glue-Down Installations:
•Premium Engineered Wood Flooring adhesive/Premium urethane adhesive • Adhesive Manufacture's recommend trowel • 3M Scotch-Blue™2080 Tape • Mineral Spirits/Urethane adhesive remover • Armstrong™VapArrest™S-135 Professional Moisture Retardant System on concrete (if needed) Use with urethane adhesive only.

Getting Started:
Use Portland cement-based patch, skim coat leveling products to correct substrate imperfections. Do not use on lightweight concrete unless instructed by that manufacturer.
Regulate temperature and humidity 72 hours before, during and after installation.
Select a starter wall. An outside wall is best, it's most likely to be straight and square with the room. Measure out from this wall, at each end, the width of two planks including the tongue plus the space needed for **expansion (thickness of plank)**.
Snap a chalk line from these points parallel to that wall.
Prior to installing the flooring, secure a straight edge inside the chalk line to act as a guide and to prevent the row of planks from shifting during installation. The straightedge could be a straight piece of lumber or piece of flooring. Alternatively, the first row can be face-nailed with finishing nails into the wood subfloor or sprig nailed into a concrete subfloor.

Spreading the Adhesive:
Using the proper trowel, hold the trowel at a 45° angle to ensure proper spread rate of adhesive. Apply pressure to allow the trowel to leave ridges of adhesive on the substrate with little adhesive left between the ridges. This will help to achieve the proper spread rate of the adhesive. **NOTE**: Change the trowel every 2,000 to 3,000 square feet, or sooner as needed, due to wear down of the teeth. This ensures the proper spread of adhesive. Improper bonding can cause loose or hollow spots. See adhesive manufacturer's guidelines for open time on the adhesive container. Proper ventilation within the room must be provided. An electric fan is helpful.
CAUTION: Follow all guidelines set by the adhesive manufacturer as well as the flooring manufacturer. Failure to adhere to the guidelines may void your flooring warranties.

Installing the Floor:
Install the first row of starter planks with the tongues facing the starter wall and secure into position. Alignment is critical and can be achieved by securing a straight edge along the chalk line (a 2 by 4 works 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. When you have the starter rows complete, you can begin the next row.

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 1 hour. Place tongue into groove of plank or strips and press firmly into adhesive. Never slide planks or strips through adhesive. Use a tapping block if necessary to fit planks snug together at side and butt ends. Clean any adhesive off the surface of the flooring before it cures with a damp cloth.

With the glue down method using adhesives, you must install the hardwood flooring by using the "Off the Floor" technique. In other words, you MUST be working from the subfloor and **NOT** standing or walking on the newly installed flooring during installation. Failure to follow this procedure can result in the planks moving during installation, creating gaps at both end and side joints. **Do not roll engineered wood flooring adhesives.**

As you continue working across the floor try to maintain a six-inch minimum space between end joints. Randomly install different lengths to avoid a patterned appearance. **Never** strike a rubber mallet or hammer directly on the flooring to engage the tongue-and-groove. This practice can damage the flooring and/or the finish.

Once the remainder of the floor has been installed, go back to the beginning to remove the straight edges, and spread adhesive on the remainder of the open subfloor. **NOTE:** The planks along the wall may have to be scribed and cut to fit to maintain a consistent expansion

space since most walls are not straight. Try to maintain at least 2-inch on the scribed plank. Once the final cuts are made set planks into place.

Remove the adhesive from the surface of the installed flooring as you work, this will help to save time. A damp rag with water or mineral spirits will remove adhesive. **NOTE:** When using Engineered Wood Flooring Adhesive clean the floor as you are working using mineral spirits - **DO NOT USE WATER.** Frequently change towels to avoid leaving a haze on the flooring surface. Clean tools while the adhesive is still wet with the appropriate cleaner defined by the instructions of the adhesive used. Urethane adhesive is very difficult to remove once dried and cured. Make every effort to prevent adhesive from getting on the flooring surface.

Final Inspection (For all Install Methods): After the floor has been cleaned, inspect the floor for nicks, scratches, gaps, or planks that may have moved during installation, as well as any other imperfections that need attention. Touch up nicks and scratches with touch-up products. Install or re-install any transition pieces, reducer strips, T-moldings, thresholds, bases and/or quarter round moldings. Trims and moldings should be nailed into the wall or subfloor, not the floor. Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity. To prevent surface damage, avoid rolling heavy furniture and appliances on the floor. Use plywood or appliance lifts if necessary. Use protective castors cups or felt pads on the legs of furniture to prevent damage to the flooring. Light foot traffic is allowed after 12 hours. Wait 24 hours before permitting moving furniture onto the floor. In areas where additional curing time is required, more time may be needed.

Nail Down or Staple Installation Procedure

Before you begin using the following instructions, please refer to the Pre-installation Methods and Job Site Conditions.
Additional Tools Needed for Nail or Staple-Down Installations:
•Stanley-Bostitch SX150-2 with LHFAD adjustable foot, Senco SLS20HF or equivalent • 1-1/4"(32 mm) 18–19-gauge staples/fasteners (minimum) • Compressor and hose • Nylon/plastic tapping block • In-line regulator • Drill •15 lb. Roofers felt or rosin paper

RECOMMENDED NAILING MACHINES:
Use only a flooring nailer that engages the top profile over the tongue at the appropriate angle. Make sure that the flooring nailer is flat against the board to prevent top edge damage. The plate in contact with the floor must be smooth and free from nicks or scratches. (See diagram #2&3)

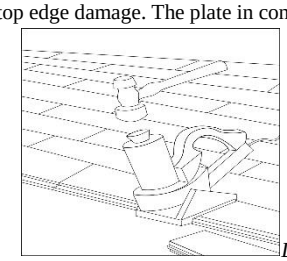

Diagram # 2

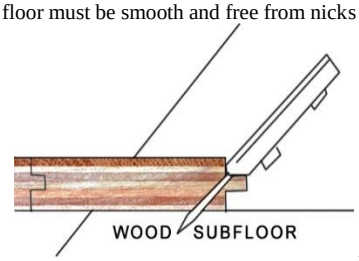

Diagram # 3

SET UP AND USE OF PNEUMATIC STAPLERS AND NAILERS:
It is recommended to initially set the compressor at 80 to 85 PSI and adjust the pressure as needed to properly set the fastener and prevent the fastener from going through or breaking the tongues.
IMPORTANT NOTE: Only use manufacturer's recommended staples or cleats.
9/16" thick products the minimum length staple/cleat 1 ¼"
½" thick products the minimum length staple/cleat is 1 ¼"
3/8" thick products the minimum length staple/cleat is 1"

Tongue and groove Enhanced Engineered Core hardwood floors may be installed over wood subfloors except for Parquet or Masonite. When installing engineered wood planks, it is necessary to use the proper type of flooring stapler made for or properly adjusted to the thickness of the engineered wood flooring that is being installed.

Minor occasional noises within the flooring are inherent to all staple/nail-down installations and can change as environmental changes occur. This is not a manufacturing defect and is therefore not covered under our warranty (see warranty brochure for complete warranty coverage). You can help reduce squeaking, popping, and crackling by being sure that the subfloor is structurally sound, does not have any loose decking or joists, and is swept clean prior to installation. You should also be sure that your stapler or nailer is setting the fastener properly, not damaging the planks, and that you are using the correct nailing schedule.

When used improperly, staples or cleats can damage wood flooring. If the tool is not adjusted properly the staples/cleats may not be positioned at the proper angle and cause blistering, peaking, squeaking, or crackling of the floor. Some models may require the use of an adapter to adjust for proper thickness. Test the tool on a piece of scrap material first, set the stapler/nailer flush on the tongue side of the plank and install a staple/cleat. Should the staple/cleat penetrate too deeply reduce the air pressure; if the staple/cleat is not deep enough then increase the air pressure using an in-line regulator. The crown of the staple/cleat should sit flush within the nail pocket to prevent damage to the flooring and to reduce squeaking. The flooring manufacturer is not responsible for damage caused by the mechanical fasteners. Read and follow manufacturer's instructions for complete set up and operation of equipment. (See diagram #4)

Diagram #4

Getting Started:
To reduce squeaks and noises created by the opposing floors, in addition to the ground cover in the crawlspace, a **15 lb. felt or rosin paper, or equivalent underlayment must be installed** over the subfloor prior to the installation of the engineered wood flooring. For staple down application use layers of 15 lb. felt or wooden shims to fill low spots. Staples must be able to penetrate for holding power. For all products 5 1/2 inches wide or greater, a serpentine glue assist (urethane-based glue) needs to be applied under the boards.

Before beginning actual installation, provide proper layout of the flooring by distribution short and long lengths equally over the areas to be floored. Measure out from the ends of your starting wall the width of the plank, plus plank thickness, for expansion and mark both ends. Where possible, lay the flooring at 90° angles to the floor joists. Make a chalk line along the starting wall using the marks you made. Flooring should be installed from several cartons at the same time to ensure a good color and shade mixture. Align the first row of planks to ensure you have a straight line from one side of the room to the other. Use a chalk line at the desired distance from the wall to help align the planks.
IMPORTANT: Leave required expansion at all vertical obstructions. This space will be covered by baseboard and quarter round.

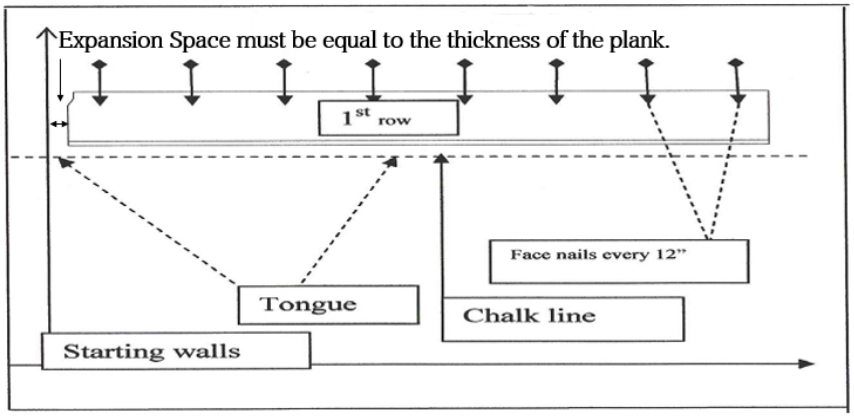

Diagram # 5

Expansion space is required along the perimeter of the room(s) of intended installation. Expansion space is dictated by the thickness of the product; for example, 3/8-inch-thick floor requires 3/8-inch expansion space, 1/2-inch-thick floor requires 1/2-inch expansion space, 9/16-inch-thick floor requires 9/16-inch expansion space. (See diagram #5)

Installing the Floor:
Blind nail at a 45° angle through the tongues. It will be easier if holes are pre-drilled in the tongues. Nail 1-inch to 2-inch from the ends and every 4-inch to 6-inch along the sides. It will be necessary to blind nail the next two rows. A brad nailer with 1-inch to 1-3/8-inch brads can also be used to blind nail and no pre-drilling is needed. Continue the installation using an engineered wood flooring stapler, using recommended staples. Staple flooring 1-inch to 2-inch from ends and every 4-inch to 6-inch along the edge tongues.
NOTE: Proper alignment is critical. Misaligned starter rows can cause side and end gaps to appear in proceeding rows of flooring.
For any product over 7-inch wide, an additional glue assist needs to be applied for installation. Urethane glue needs to be applied to the subfloor in a serpentine manner every 8-10-inch going vertical to the board's horizontal direction.

Row 1: It is necessary to work from right to left when installing tongue-and groove-engineered hardwood flooring. Plank 1 should be a full-length board, laid in the right-hand corner of the room. Lay the plank with the groove of the long side facing the wall. Use wood wedges to maintain spacing around the perimeter of the room equal to the plank thickness. Place each plank firmly against the wood wedges. Slide the end tongue of the board to be installed into the end groove of the board previously installed. After setting the first row and making sure you're working against a firm starting point, lay out three to four rows before starting to install. Lay the rest, plank after plank, in this manner until you have completed the first row. Cut the last plank accordingly. Ensure that this first row is straight using the wedges to maintain proper expansion space from the wall. Planks may require scribing and cutting to fit wall curvature if present.
Row 2: When possible, use leftover plank from the first row to begin the second row to minimize waste. The initial layout of the material will allow you to check your end seams to ensure they are not too close. End joints on adjoining rows should be offset by no less than 6-inch. Align this plank and lock the side into place against the first plank in row 1. The next plank is aligned with the end joint first into the previous plank in row 2. The side of plank is then tapped lightly against the previously laid row. Continue laying in this way across the entire row. Remove the fitting wedge and press in the row of planks with a light pressure on the long side. Tapping Block may be required to ensure a tight fit of all long-side joints. The planks are now laid row after row in this sequence.
Row 3 and remaining rows: Move rows if necessary to ensure that you are not showing any undesirable joint patterns. The rest of the row's end joints should be random throughout the floor. Your first three rows are staggered, ensuring that offset of previous row with end joints are no closer than 6-inch, or longer for wider width products, from one another. When the planks are being placed, use a non-random pyramid or stair step pattern to ensure the planks remain engaged through the force of the tapping. Stretch and stick low adhesion delicate surface painters' tape across every 3 to 5 rows of planks approximately 2-feet apart from each other to hold the floor in place until the glue sets. Remove tape within 24 hours.

Final Inspection: See final inspection instructions on page 6.

Floating Installation for Engineered Flooring

Before you begin using the following instructions, please refer to the Pre-installation and Job Site Conditions
Additional Tools Needed for Floating Installations:
•Premium engineered wood glue • 1/8" Foam underlayment • 6 Mil Poly plastic sheeting • Saw -Hand, Saber, Circular or a Jigsaw) preferably with carbide tipped blade.

Getting Started:
Underlayment:
Unroll the 6 **mil.** Poly sheeting overlapping edges 4" and seal seams with clear plastic tape. Allow the poly to run 2" up the wall and trim back after installation of flooring. Install 1/8" foam underlayment. Underlayment requirements are critical to a floating installation. Excessive pad compression or compaction is a common cause of seam failure. Lay the underlayment on the floor with the moisture barrier facing up. The direction of the underlayment should lie parallel to the direction of the floor being installed. For the first row of flooring, the underlayment should be placed so that approximately 1-inch overlaps onto all perpendicular walls. Place the following row next to the first row on top of the lower moisture barrier overlap. Remove the adhesive strip and fold back the upper overlap on the second row. Make sure the underlayment fits together tightly; don't leave gaps. On the last row, place the underlayment 1-inch up the wall. To join rolls on the short side of the underlayment, use a moisture-resistant tape to connect the two pieces so water cannot penetrate the underlayment. **Note: Use of a floating floor 2 in 1 underlayment may be used. Follow manufacturer's instructions for application installing the 2 in 1 underlayment.**

Expansion Space:
An expansion space equal to the plank thickness 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. Doorways or archways 48 inches or less and rooms larger than a 26-feet X 33-feet are required to have a T-Molding.

Glue Placement-Glue Clean Up:
The recommended glue for floating installation is a premium Tongue & Groove class D3 rated Floating Floor Glue. The glue must be placed on every plank along the topside of the groove and bottom side of the tongue for the full length of the side and end. Apply only a 3/32-inch bead of glue. If the groove is filled with glue, it will be difficult to close the seam, preventing a tight fit. If any glue squeezes out of the seam between the planks, allow it to dry for 10 to 15 minutes and then lightly scrape it away with a plastic scraper or putty knife. Any glue left may be cleaned with a damp cloth. Do not allow the glue to dry on the face of the flooring; it will be very difficult to clean off. Any damage or separation of planks from too much adhesive or damage caused using incorrect tape or length of time tape remaining on the floor is the responsibility of the installer and is not covered by Southwind warranty.

Installing the Floor:
The installation begins with three rows of flooring glued together and held in place with low adhesion delicate surface painter's tape with the groove side facing the wall. Spacers must be used to establish the expansion space from the walls equal to the plank thickness. These three rows must be straight, square and in rack because they establish the alignment of the rest of the floor. After putting these three rows together, allow the glue to set 15 to 45 minutes before proceeding with the installation.

With the tongue facing out, the planks can be tapped together with a tapping block on the tongue to make a snug fit. After installing 8 or 10 rows of flooring, stand back and check for crowning or heaving due to tension strapping or any damage caused by improper taping**.**

Row 1: It is necessary to work from right to left when installing tongue-and groove-engineered hardwood flooring. Plank 1 should be a full-length board, laid in the right-hand corner of the room. Lay the plank with the groove of the long side facing the wall. Use wood wedges to maintain spacing around the perimeter of the room equal to the plank thickness. Place each plank firmly against the wood wedges. Slide the end tongue of the board to be installed into the end groove of the board previously installed. After setting the first row and making sure you're working against a firm starting point, lay out three to four rows before starting to install. Lay the rest, plank after plank, in this manner until you have completed the first row. Cut the last plank accordingly. Ensure that this first row is straight using the wedges to maintain proper expansion space from the wall. Planks may require scribing and cutting to fit wall curvature if present.
Row 2: When possible, use leftover plank from the first row to begin the second row to minimize waste. The initial layout of the material will allow you to check your end seams to ensure they are not too close. End joints on adjoining rows should be offset by no less than 6-inch. Align this plank and lock the side into place against the first plank in row 1. The next plank is aligned with the end joint first into the previous plank in row 2. The side of plank is then tapped lightly against the previously laid row. Continue laying in this way across the entire row. Remove the fitting wedge and press in the row of planks with a light pressure on the long side. Tapping Block may be required to ensure a tight fit of all long-side joints. The planks are now laid row after row in this sequence.
Row 3 and remaining rows: Move rows if necessary to ensure that you are not showing any undesirable joint patterns. The rest of the row's end joints should be random throughout the floor. Your first three rows are staggered, ensuring that offset of previous row with end joints are no closer than 6-inch, or longer for wider width products, from one another. When the planks are being placed, use a non-random pyramid or stair step pattern to ensure the planks remain engaged through the force of the tapping. Stretch and stick low adhesion delicate surface painters' tape across every 3 to 5 rows of planks approximately 2-feet apart from each other to hold the floor in place until the glue sets. Remove tape within 24 hours.

Final Inspection:
Trim excess underlayment (floating installation only). **See final inspection instructions on page 6**.
Complete all jobs by using the coordinating wood filler kit for minor corrections or areas where brad nails were used in the trim or the flooring.
Allow the floor to dry for a minimum of 12 hours before removing all spacing wedges and allowing foot traffic.
Warranty for separation of planks and damage caused using incorrect tape or length of time the tape remained on the floor is the responsibility of the installer.

Floor Protection During Construction:
If the floor is to be covered, the floor should be thoroughly cleaned prior to covering to prevent grit damage to the finish. Do not cover with plastic, red rosin, felt or wax paper or previously used cardboard. Ink from printed cardboard could damage the hardwood floor. Instead, use breathable materials such as clean, dry, plain, uncoated cardboard or Kraft paper.
A common reinforced builder's paper is a good choice. Any covering should be taped with a low-adhesion tape to base or shoe moldings. Avoid taping to finished flooring. When taping paper or sheets together, tape them to each other, not to the floor. The floor must be completely covered to eliminate uneven ambering from exposure to UV light**.**

WARRANTY NOTE: **(See Southwind Engineered Floor Warranty for full warranty details)**
Lifetime Structure Warranty Residential & Commercial
Lifetime Residential Finish Warranty
5 Year Light Commercial Finish Warranty
Manufacturing Defects Warranty
Installer should provide owner with one carton end label from installed product along with the pre-installation moisture content readings for warranty purposes. Owners should retain carton end label and copy of invoice with product style name and style number for their records. Owner should retain excess flooring and store in a climate-controlled area for future repairs in the event of damaged flooring.
The use of stain, filler or putty for correction is considered a normal practice and a routine part of installation and for touch ups over the life of the product.

Cleaning & Maintenance: (See Southwind Engineered Floor Care Guide for full details)
Engineered Hardwood Floors are very easily maintained. No wax, no mess. See Southwind Cleaning & Care Guide for Engineered Wood.
The best way to care for your new floor is to schedule routine maintenance, which includes sweeping the entire floor at least once a week to remove dirt and debris that may scratch the floor. High traffic areas such as entrances, doorways and traffic areas will require cleaning more frequently, depending upon the amount of concentrated foot traffic. Following these easy steps is the key to keeping your new floor looking beautiful for years to come.
1: Routinely sweep your floor with a soft bristle broom or use a vacuum designed for use on hardwood floors.
WARNING: Vacuums with a beater bar or power rotary brush head can damage a wood floor and should never be used.
2: Apply recommended hardwood cleaner (Bona) to a clean cloth or microfiber mop; do not spray directly onto the floor. Do not use cloths that have been exposed to fabric softener as it could cause streaking. When cleaning, use a back-and-forth motion with the mop. When the cloth or microfiber cover becomes soiled, simply replace it with a clean one. Cleaning the floor with a soiled cover could cause streaking. Most microfiber mop covers are re-usable and can be cleaned using a standard washer and dryer. Refer to the manufacturer's cleaning instructions when washing cloth or microfiber covers.

Protection & Maintenance:
Remove spills promptly and use the recommended hardwood cleaner.
Use felt protectors under heavy pieces of furniture and chairs. Change felt protectors periodically.
Use transition mats at all exterior entrances.
Never use rubber or latex backed rugs on your floor. We recommend the use of non-slip rug pads, non-abrasive, and non-yellowing. Rug pads should extend all the way to the edges of the rug to work properly. Regularly clean under rugs and rug pads.
Spiked heels or shoes in need of repair or cleated athletic footwear can severely damage the floor.
Replace hard plastic, metal castors, or wheels on furniture with soft rubber castors or use a protective mat under the castors.
Never wet mop or use damp mop methods that allow moisture to puddle on the floor surface.
Never use steam cleaners on your floor. This will force moisture into the finish and cause damage to your floor.
Never use oil soaps, wax, liquid or any other household products, surface cleaners, or polish not formulated specifically for use with hardwood flooring. Don't use 2-in-1 cleaners that contain acrylics or urethane polish to restore gloss. These products could damage your floor.
Keep pet nails trimmed as recommended by your veterinarian.
Protect your floor when using a clean, soft-rubber tired dolly for moving furniture or appliances.
Use protective window coverings to protect hardwood floors from excessive heat during periods of direct sunlight.

All instructions and recommendations are based on the most current information available. If you receive a printed copy of these instructions, please refer to www.southwindfloors.com or our technical service line @ 800-272-2808 to ensure you have the most up to date version of our installation instructions.

Pre-Installation Moisture Content Readings
Record and leave with homeowner**

Wood Subfloor

Date:

Installation company name:

Moisture content: % Average moisture content of subfloor
% Average moisture content of hardwood
% Difference between subfloor and flooring

Moisture readings taken by:

Concrete Subfloor

Date:
Company performing concrete moisture readings:

Moisture readings:

Test method used: Calcium Chloride (ASTM F1869)
RH (ASTM F2170-02)1869
Electronic Meter

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