



Unfinished Engineered Hardwood Flooring Installation Guidelines

This document covers all unfinished engineered wood flooring inclusive of plank, herringbone, chevron, and parquets. Please read carefully. Some products (species, widths, and flooring types) are not suitable for some environments and site conditions. Please consult a flooring professional familiar with your environment and site conditions prior to installation. It is always best practice to hire or consult an installation professional that has been certified by the National Wood Flooring Association (NWFA).

Woodworking is inherently dangerous. Please follow all tool manufacturer's safety recommendations, common sense, and industry-standard safety precautions. Warning: drilling, sawing, milling, and sanding wood products produces wood dust, a substance known by the State of California to cause cancer.

PRODUCT SPECIFICATIONS:

Saroyan's standard unfinished engineered wood flooring products range in thickness from ½" up to 13/16" and are backed with multi-ply core that can be stapled or cleated to an appropriate OSB or plywood subfloor or glued down to acceptable substrates with urethane or silane-based flooring adhesives. It is typically an unfinished, tongue and groove, end-matched product available in various length structures. Installing unfinished hardwood flooring requires less time to install (as compared to a factory-finished floor). However, unfinished hardwood flooring requires the additional steps of filling, sanding, staining, and finishing after the installation is complete. The wear layer of Saroyan's engineered wood flooring is natural wood; color, grain pattern, and character will vary from board to board. The installer should take care in the placement of each board to ensure good distribution of lengths and natural variation during the installation. Upon receipt of flooring, the purchaser should document square footage, moisture content, dimensions, milling and grade. For best results, it is highly recommended that a trained flooring professional executes the preparation, installation and the entire finishing process.

INSTALLER/OWNER RESPONSIBILITIES:

Hardwood floors are a product of nature; therefore, they will show variations in color, grain pattern, and natural character. These wood floors are manufactured in accordance with accepted NWFA standards, which permit a defect tolerance not to exceed 5%. The defects may be of a manufacturing or natural type.

- The installer assumes all responsibility for final inspection of the product's quality. This inspection of the flooring must be done before installation. Carefully examine flooring for color, grade, milling, dimensions, and overall quality before installing it. If there are questions of acceptability, contact the seller immediately and cease installation.



- Prior to installation of any hardwood flooring product, the installer must determine that the job/site environment and the subfloor involved meet or exceed all standards as stipulated in the installation guidelines as well as guidelines provided by the National Wood Flooring Association (NWFA) ([Technical Guidelines | NWFA](#)).
- Saroyan accepts no responsibility for product failure resulting from subfloor or job site environmental deficiencies.
- Installation is deemed acceptance of the product; thus, no claims will be honored.
- The use of filler or putty during installation should be accepted as normal procedure.
- When flooring is ordered, it is important to account for overages needed from losses due to cutting, grading, and installation. For installations with islands, irregular perimeter walls, and flooring run on a diagonal or parquet flooring; it is suggested that you ask your supplier for a cutting allowance on these or other unique installations. Cutting factors can vary widely and it is very important to allow extra material for cutting. Since Saroyan flooring is made to order, needing to order additional material later will delay your project and potentially result in a wood shade mismatch.
- Should an individual piece be doubtful as to grade or manufacturing tolerance, the installer should not use the piece.
- Saroyan accepts no responsibility for product failures resulting from post-installation sanding, staining, or finishing.

PRE-INSTALLATION PROCEDURES — Job Site Inspection:

- Hardwood flooring should be one of the last products installed on a job. All work involving moisture (concrete, plumbing, acoustical ceilings, drywall taping, painting, stone, or tile installations, etc.) should be completed prior to flooring installation. This product can be installed above, on, or below grade. Consult a flooring professional regarding on or below grade installations. Glue-down installations are required for on or below grade installations of engineered wood flooring.
- Floating installations are not warranted with any Saroyan engineered wood flooring product.
- Below grade installations and installations in structures that have planters attached to adjoining walls require that not only the floor, but all surfaces must match the moisture guidelines mentioned below.
- All gutters and downspouts must be in place. Exterior grading must be complete with surface drainage directing water away from the building.
- The building should be sealed with all outside doors and windows in place.
- Basements and crawl spaces must be dry and well ventilated in accordance with NWFA guidelines ([Technical Guidelines | NWFA](#)). Black 6-mil plastic is required to cover soil in a crawl space.



- Subfloor must be checked for moisture content using a calibrated moisture meter or calcium chloride test.
- Permanent air conditioning and heating systems must be in place and operational. The installation site should maintain a room temperature of 60°- 80° F and relative humidity of 35% to 55% for 14 days prior to installation, during installation, and until occupied, to allow for proper acclimation of the flooring product.
- Flooring must be kept inside, placed in the room of installation, and allowed to acclimate prior to installation. Acclimation time will vary depending on site conditions and can range from days to weeks. See current NWFA guidelines ([Technical Guidelines | NWFA](#)). A maximum of 4% difference in moisture content between flooring and subfloor is required.
- The flooring adhesive chosen should have a comprehensive warranty for wood flooring installations. The adhesive manufacturer should also offer a compatible moisture remediation product(s).

PRE-INSTALLATION PROCEDURES — Subfloor Guidelines and Preparation:

All subfloors and subfloor systems must be structurally sound and must be installed following their manufacturer's recommendations. Saroyan warranties do not cover any problems caused by inadequate substructures or improper installation of said substructures. See NWFA guidelines for details ([Technical Guidelines | NWFA](#)).

ACCEPTABLE SUBSTRATES

- *Unsealed* concrete slabs with a minimum of 3000 psi. It is the responsibility of the installer to test or verify that the slab has no contaminants such as sealers, paint over-spray, etc.
- Appropriate OSB (23/32”) or plywood (3/4”) subfloors. These subfloors must be suitable, and rated for, all wood floor installations. When installing an approved subfloor, refer to specific structural panel and manufacturer's instructions for joist spacing and nailing requirements.
- Existing wood flooring. Install product at 90° to existing plank long axes.

SUBFLOOR INSPECTION

- **CLEAN** - Subfloor must be free of all contaminants including wax, grease, paint, oil, sealers, and other debris. Make sure there are no loose areas and that the subfloor is structurally sound.
- **LEVEL/FLAT** – Subfloors within 1/4” in 10’ span and/or 3/16” in 6’ span (1/8” in 6’ span for glue down installation). Sand high areas or joints. Low areas can be filled with recommended fillers by the adhesive manufacturer, if leveling concrete. Other leveling products are available for wood subfloors. Subfloor irregularities and undulation may



cause a wood flooring installation to develop hollow spots between the flooring and the subfloor.

- **STRUCTURALLY SOUND** - On wood subfloors, nail or screw any loose areas that squeak. Replace any water damaged or compromised subflooring or underlayment.
- **DRY** - Moisture content of OSB or plywood subfloor must not exceed 13% on a calibrated wood moisture meter or read more than a 2% difference than moisture level of product being installed (4% for products that are <3" wide). Moisture content of a concrete subfloor must not exceed 4.5 on a Tramex meter or 3 lbs. with a calcium chloride test. If moisture exceeds 4.5 on a Tramex meter, do not lay the flooring. Many adhesive manufacturers offer vapor emission-reducing products that reduce slab surface moisture to a level which allows for installation and will promote longevity of the installation. Be sure to use the correct vapor emission reduction product for the adhesive of choice.

SUBFLOOR DETAILS

- **Concrete slabs**
Factory-finished engineered wood flooring can be directly adhered to unsealed concrete (sealed concrete can promote delamination of the installation). If concrete is sealed, the sealer must be removed prior to installation. All concrete subfloors must be tested for moisture content. Initial moisture testing can be done with a Tramex meter, or a calcium chloride test. Moisture should not exceed 4.5 on a Tramex meter or 3 lbs. per 24 hours with a calcium chloride test. Initial testing can be done using a calibrated moisture meter as a survey tool. Final acceptance should be based on a calcium chloride test before proceeding with the installation. Test three areas up to 1,000 SF and one additional area per 1,000 SF thereafter. Be sure to include testing areas near exterior walls and walls containing plumbing (which are prone to higher moisture).
- **Wood subfloors (OSB & plywood)**
Make sure subfloor is dry and well-fastened per manufacturer's recommendations to avoid squeaking or popping before the floor is installed. Level any raised subfloor panel edge joints by sanding. When installing over existing wood floors, install the new flooring at a 90° angle to the existing plank long axes. Moisture content of wood subfloors should not exceed 13% or read more than a 2% difference than moisture level of the product being installed (4% for products <3"). It is best practice to take moisture readings in a minimum of 20 locations for up to the first 1,000 SF and an additional four readings per 100 SF thereafter (average results).

FINAL ROOM PREPARATIONS

As part of your subfloor preparation, remove any existing base molding, quarter round/shoe molding, or transitional moldings. These items can be replaced after installation of the floor. All door casings and jambs should be notched out or undercut to allow the proper expansion space for the floor.



STAPLE AND CLEAT INSTALLATION

TOOLS AND ACCESSORIES NEEDED FOR INSTALLATION:

- Appropriate personal protective equipment
- Fastening gun (pneumatic or manual; use fasteners recommended by manufacturer)
- Power saw
- Chalk line
- Calibrated moisture meter
- Pull bar
- Tapping block
- Finish nails and hammer
- Urethane or silane-based flooring adhesive cartridges and caulk gun (for glue assist on products >5" in width)
- Roll on vapor retarder (if necessary)
- Broom and vacuum

STEP 1: SUBFLOOR TREATMENT

If subfloor moisture content is above the allowable limits, a liquid moisture retarder must be used. Be sure to use an adhesive-compatible moisture retarder as recommended by the adhesive manufacturer. Once the system is applied to the subfloor, allow it to fully cure before starting the installation of wood flooring.

STEP 2: SET UP EQUIPMENT

Inspect all equipment prior to use. Test on scrap material first. When used improperly, the tools, staples, and cleats can damage flooring. Parts that engage the plank must not have any exposed sharp edges that can scratch or damage the flooring. Make sure the fastening gun's adapter(s) seat properly to the tongue of the flooring. Only use the tool manufacturer's recommended staples or cleats for installing the specific thickness of engineered wood flooring. Make sure the pressure is set according to manufacturer's recommendations.

STEP 3: RACKING THE FLOOR

Rack, or lay out, the flooring to achieve best results for visual acceptability prior to installation. While racking the floor, be sure to evenly distribute lengths, color variation, character, and other variables throughout the installation. Also, be sure that end joints in adjacent rows are offset by twice the width of the flooring product (i.e., if installing a 5" wide product, offset all end joints by a minimum of 10").

STEP 4: MARKING YOUR STARTING LINE

It is recommended to install your plank flooring parallel to the longest, straightest, continuous line in the room. If this line is not an outside wall, layouts for starting lines can be found at



Technical Guidelines | NWFA. Alternatively, layouts and installation guidelines for products such as herringbone, chevron, and parquet can be found at Technical Guidelines | NWFA. When starting from a wall, a gap should be left between the first row of engineered wood flooring and the wall, door jambs, and any other stationary/fixed surface to account for potential expansion. The width of the expansion gap should equal the thickness of the finished wood flooring being installed. For example, if a ½” thick flooring product is being installed, a ½” gap should be left between the first row of flooring and the wall. Using this guidance, measure out from wall 4 ½” for 4” products, 6 1/2” for 6” products, etc., and snap a chalk line parallel to the wall. Starter blocks of finished flooring may be inserted between the wall and the first row to prevent movement and maintain gap spacing as the rest of the flooring is being installed.

STEP 5: LAYOUT STARTER ROW

Lay one row of plank along the entire length of the working (starting) line. Place groove edge of flooring toward the starting wall. Use small finish nails for top nailing the edge closest to the wall. Set and fill the nail holes with appropriate filler. Blind nail or staple the tongue edge of the flooring in the normal manner. Space fasteners at 6” to 8” apart. Saroyan always recommends glue assist. The glue assist requires applying a 1/4” bead of adhesive in a serpentine pattern to the back of each plank or on the subfloor before stapling or cleating.

STEP 6: INSTALLING THE FIELD FLOORING

Continue installing each additional row of flooring, maintaining proper pattern repeat. Distribute lengths to avoid “H” patterns and end joints less than 8” in adjacent runs. A random mix of plank variability is suggested to enhance the natural beauty of the floor and should be addressed through proper racking (described in Step 2). If installing using glue assist, apply a 1/4” bead of flooring adhesive in a serpentine pattern to the back of each plank or to the subfloor. Always use a tapping block to gently tap against the tongue to seat the joints (tapping the groove may damage the surface or edge). Nail flooring through the tongue on a 45° angle using the proper adapter. Install the nails or staples no further than 1” from the end of each board and 6” to 8” on center, using 1” staples or 1¼” to 1½” flooring cleats. Be sure to leave the proper expansion space at all vertical obstacles. Keep the flooring clean of dust and debris during installation.

STEP 7: FINAL ROW INSTALLATION

When the far wall is achieved, flooring may have to be cut to width to fit the final row to the wall. Be sure to leave the proper gap (equaling the finished product thickness) between the last row and the wall. Use a pull bar to snug the last row of planks with the completed second to last row. For wood subfloors, face nailing close to the wall is needed to secure the last row of flooring. Fill any remaining nail holes and other open character. The floor is now ready for sanding, stain, and coatings.

STEP 8: COMPLETE THE JOB

Install any transition pieces that may be needed. Sand and finish the floor. Reinstall your base and other moldings. Be certain to nail moldings into the wall, not the floor.



STEP 9: PROTECTING THE NEW INSTALLATION

To prevent surface damage, be sure that the floor is free of dust particles and other debris which can scratch, gouge, or indent the surface when walked on. It is recommended to cover the floor with rosin paper both before and after finishing. If heavy trades will be occupying the home, we recommend that plywood, Masonite, or Ram Board™ be placed on top of rosin paper to prevent the floor from being damaged. Never use plastic or polyethylene sheeting.

GLUE DOWN INSTALLATION

TOOLS AND ACCESSORIES NEEDED FOR INSTALLATION

- Personal protective equipment
- Urethane or silane-based flooring adhesive
- Adhesive trowel with notching as recommended by the adhesive manufacturer
- Power saw
- Chalk line
- Pull bar
- Calibrated moisture meter/calcium chloride test kit
- Broom and vacuum

STEP 1: ADDITIONAL SUBFLOOR INSPECTION AND PREPARATION

Surface areas requiring patching or leveling must be done using quality products designed for the type of subfloor being patched or leveled. Manufacturer's recommendations and instructions must be followed. Many adhesive manufacturers offer vapor emission-reducing products that reduce slab surface moisture to a level which allows for installation and will promote longevity of the installation. Be sure to use the correct vapor emission mitigation product for the adhesive of choice.

STEP 2: RACKING THE FLOOR

Rack, or lay out, the flooring to achieve best results for visual acceptability prior to installation. While racking the floor, be sure to evenly distribute lengths, color variation, character, and other variables throughout the installation. Also, be sure that end joints in adjacent rows are offset by twice the width of the flooring product (i.e., if installing a 5" wide product, offset all end joints by a minimum of 10").

STEP 3: MARKING YOUR STARTING LINE

It is recommended to install your plank flooring parallel to the longest, straightest, continuous line in the room. If this line is not an outside wall, layouts for starting lines can be found at [Technical Guidelines | NWFA](#). Alternatively, layouts and installation guidelines for products such as herringbone, chevron, and parquet can be found at [Technical Guidelines | NWFA](#). When starting from a wall, a gap should be left between the first row of engineered wood flooring and the wall, door jambs, and any other stationary/fixed surface to account for potential expansion.



The width of the expansion gap should equal the thickness of the finished wood flooring being installed. For example, if a ½" thick flooring product is being installed, a ½" gap should be built in between the first row of flooring and the wall. Using this guidance, measure out from wall 4 ½" for 4" products, 6 1/2" for 6" products, etc. and snap a chalk line parallel to the wall. Starter blocks of finished flooring may be inserted between the wall and the first row to prevent movement and maintain gap spacing as the rest of the flooring is being installed.

STEP 4: SPREAD THE ADHESIVE

The flooring adhesive should not be applied if the subfloor temperature is below 55° F (be sure to check manufacturer specifications). Hold the proper trowel (as specified by the adhesive manufacturer) at a 45° angle and spread a sufficient amount of adhesive in an area that is to be covered. The trowel will leave ridges of adhesive. Application rates for the adhesive are determined by the adhesive manufacturer. Working time may vary due to climate conditions in the space of installation. Relative humidity must be controlled between 35-55% for successful performance during and after installation. During the installation, occasionally remove a piece of flooring from the subfloor and inspect the back for proper adhesive transfer. Glue transfer of at least 80% is necessary to ensure sufficient holding strength. Always refer to the specific instructions on the adhesive label for open time.

STEP 5: LAYOUT STARTER ROW

Lay one row of plank along the entire length of the working line. Place the tongue edge of the flooring toward the starting wall. The first row must be aligned and seated in the adhesive, as all additional rows will be pulled back to this original row.

STEP 6: INSTALLING FIELD FLOORING

Do not slide the planks through the adhesive when placing them in position. Simply place the long tongue into the adjoining long groove as close as possible to the adjoining row and engage into final position. Planks should be butted to the adjoining plank. A random mix of plank variability is suggested to enhance the natural beauty of the floor and should be addressed through proper racking (described in Step 2). For installation into "wet" adhesive, workers should not walk on the newly installed flooring, but work with their feet on the subfloor. If it is absolutely necessary to work on the newly installed flooring, use a kneeler board. The kneeler board will distribute body weight evenly over a wider area. On additional rows, it may be necessary to align planks with a cut-off piece of scrap wood. A soft rubber mallet can be used to gently tap the planks on the edge until they are pulled into proper position. Tapping the plank may indent or damage the face of the floor if not careful. Check for a tight fit between all edges and ends of each plank. End joints of adjacent rows should be staggered or offset a minimum of 8". Be sure to leave the proper expansion space at all vertical obstacles. The installer should check for good adhesive transfer throughout the installation to prevent hollow spots. Be sure not to spread the adhesive too far ahead of your work area and be sure to keep the flooring clean of dust and debris during the installation process. Rolling with a 30-pound roller is recommended



for all installations. Be sure to clean any debris from the wood flooring and also check the roller to ensure it is free of debris. Any residual debris could damage the floor during rolling. Flooring that is not flat should be tacked or weighted to ensure proper contact between the flooring and the subfloor.

STEP 6: FINAL ROW INSTALLATION

When the far wall is achieved, flooring may have to be cut to width to fit the final row to the wall. Be sure to leave the proper gap (equaling the finished product thickness) between the last row and the wall. Use a pull bar to snug the last row of planks with the completed second to last row. For wood subfloors, face nailing close to the wall can assist in securing the last row of flooring.

STEP 7: COMPLETE THE JOB

Most flooring adhesives will be cured in 12-20 hours (check adhesive manufacturer's specifications/recommendations). The installation should not be covered until the specified cure time has lapsed. It is best practice to avoid heavy foot traffic on the flooring for at least 24 hours. Fill any remaining nail holes and other open character. Install any transition pieces that may be needed prior to finishing. Sand and finish the floor. Install your base and other moldings. Be certain to nail moldings into the wall, not the floor.

STEP 8: PROTECTING THE NEW INSTALLATION

To prevent surface damage, be sure that the floor is free of dust particles and other debris which can scratch, gouge, or indent the surface when walked on. It is recommended to cover the floor with rosin paper both before and after finishing. If heavy trades will be occupying the home, we recommend that plywood, Masonite, or Ram Board™ be placed on top of rosin paper to prevent the floor from being damaged. Never use plastic or polyethylene sheeting.

INSTALLATION OVER RADIANT HEATING

SPECIAL NOTES ABOUT RADIANT HEATING INSTALLATIONS:

- Flooring plank widths greater than 6" are not recommended for use over any radiant heating system. Any warranty will be voided in this situation.
- Saroyan does not recommend the installation of maple, hickory, or exotic engineered floors over radiant heating systems. Any warranty will be voided in this situation.
- Unfinished engineered wood floors are covered by a limited warranty. However, warranty coverage may be lost due to failure to follow ALL installation guidelines and/or failure to use proper materials or tools. Please read all guidelines carefully before beginning installation.



- Saroyan recommends the use of a humidifier and outside thermostat as part of the radiant heating system.
- Surface temperature of flooring must never exceed 81°F (27°C). Exceeding this temperature will cause damage to engineered hardwood flooring and void any warranty by the flooring manufacturer. Relative humidity must be maintained between 35% and 55% at all times. The use of a humidifier or dehumidifier may be required to maintain these parameters.
- Radiant installations require strict compliance with all job site inspections and start-up of the radiant heating system.

STEP 1: *ADDITIONAL* SUBFLOOR INSPECTION AND PREPARATION FOR RADIANT INSTALLATION

The relative humidity at the job site should be maintained between 35%-55% at all times. Temperature settings at the time of installation should be within 15° F of these normal living conditions. The radiant heating system must be installed correctly according to the manufacturer's specifications. If installing over a concrete floor, the concrete must have been installed and cured at least 6 weeks prior with no heat transfer. The heating system should then be run at 2/3 of maximum output for a minimum of two weeks to allow any remaining moisture to evaporate, attaining its final moisture content without causing damage. A minimum of three days before installation, the heating system must be reduced to a suitable temperature representative of living conditions. If there are any high spots on the subfloor, care must be taken not to damage the radiant system if leveling is required.

STEP 2: FLOORING ACCLIMATION

Flooring must be placed in the room of installation and allowed to acclimate prior to installation. Acclimation time will vary depending on site conditions. See current NWFA guidelines ([Technical Guidelines | NWFA](#)). A maximum of 4% difference in moisture content between flooring and subfloor is required.

STEP 3: INSTALLATION

Choose the proper installation method for both site conditions and the flooring product selected. See the previous instructions for specifics on staple and glue-down installations. Special care must be taken to avoid damaging the radiant system when doing staple down installations.

STEP 4: AFTER INSTALLATION

Two days after installation is complete, gradually (over a period of one week) raise the temperature of the radiant heating system to its desired operating level. Take the difference of the desired system temperature to the current system temperature and divide by 7. This will determine the daily recommended temperature increase until the desired system temperature has been reached. Surface temperature of flooring should never exceed **81°F (27°C)**. Exceeding this



temperature will cause damage to engineered hardwood flooring and void any warranty by the flooring manufacturer.