SUPERIOR
HARDWOOD FLOORING

GLUE DOWN INSTALLATION GUIDE

A GLUE DOWN INSTALLATION GUIDE FOR SUPERIOR ENHANCED AND ENGINEERED FLOORS.

SUPERIORFLOORING.CA

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IMPORTANT INFORMATION

Our installation instructions and warranty take precedence over NWFA guidelines. However, for situations not specified by our installation guidelines, NWFA guidelines are recommended. If the installer has concerns with grading, manufacturing, or finishing quality and cannot place the board in a less conspicuous place (i.e. closet), or cannot eliminate the imperfection, they should not install the material in question and contact their retailer. Pieces not installed because of colour variation, appearance, length, or personal subjective standards are not considered defective. Once the board is installed, it is deemed acceptable by both the installer and/or homeowner. The installer or homeowner is fully responsible for all installed hardwood flooring, even if the homeowner is not present at the time of installation.

STORAGE & HANDLING

Your hardwood floor is a natural organic product which is affected by the humidity levels in the air around it. Both before and after installation it will absorb or release moisture. Wood is a natural material that seeks to be in balance with its surroundings. Hardwood destined for use in wood floors is carefully kiln-dried for that purpose. Typically, hardwood will expand during the summer months and shrink in the winter. Acceptable humidity levels **(Chart 1)** should be maintained at all times in the rooms where your floor is installed. You will receive the wood for your floor in specially designed cartons that have been stored in a controlled environment. These conditions must be maintained throughout shipping, installation, and thereafter.

The following considerations are important, and failure to follow them will void your warranty.

ACCLIMATION

Herwynen Sawmill Ltd. will not warranty Superior or Enhanced Flooring products that aren't stored and installed within the relative humidity range specified in Chart 1. Superior and Enhanced Flooring products cannot be stored on the construction site or acclimatized before install, doing so will void your warranty.

WOOD SUBFLOOR MOISTURE CONTENT

Measure the moisture content of the sub floor and the hardwood to be installed using a moisture meter. The moisture reading of the sub floor must be between 6% and 12% maximum. Hardwood strips must be under 2% maximum difference when compared to the sub floor. If the moisture content of the sub-floor is too low or high, postpone installation. Increase ventilation or use a humidifier or dehumidifier to adjust moisture levels before installation.

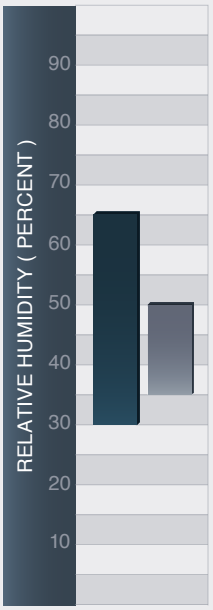
SUBFLOOR DESIGN

For wood sub-floors, hardwood flooring must be installed on plywood or OSB over joists. If the existing sub floor consists of particle board, then it will be necessary to overlay it with at least 5/8" plywood before installation. Be sure hardwood flooring is installed over industry standard sub-floors and underlayment, which as a minimum standard, must be 5/8" A.P.A. approved C.S.P/D.F.P. plywood C.O.F.I stamped, 23/32" or thicker O.S.B. underlay grade PS2-92, or 5/8" tongue and groove boards.

RELATIVE HUMIDITY

Drywall, plaster and concrete must be completely dry and the heating system fully operational with the temperature maintained at 22°C for one to two weeks before the flooring is delivered to the site. All concrete in the structure must have cured for at least 30 days.

CHART 1



Acceptable humidity levels should be maintained at all times in the rooms where your floor is installed.

Superior Engineered Flooring & Enhanced Hardwood Flooring
30 - 65%

Superior Hardwood Flooring
35 - 50%

CONCRETE SUBFLOORS

Concrete leveling is a very important point. Concrete must be flat/level within 3/16th over a 10 ft. span (< 5 mm over 3 m). For new concrete, allow a minimum of 30 days cure time prior to start of concrete moisture tests. Various methods and testing devices exist to check the moisture level of a concrete subfloor. Measure moisture content with an approved moisture tests are either a relative humidity moisture test or a calcium chloride test.

POLYETHYLENE TEST

Polyethylene test (ASTM D 4263), a preliminary surface test, not a warranted test. Tape a plastic film of 2'x2' (60 x 60 cm) at several points over concrete for 48 hours to see if concrete changes color or condensation occurs. If beads of water are found on the subfloor or the concrete appears darker, further testing is necessary. This method is empirical and is a preliminary test, further analysis will be required. The reading is valid at 24 hours, but it's even better if the test can stay in place until 72 hours have passed.

RELATIVE MOISTURE TEST

Relative moisture test (ASTM F 2170), thorough test. Using an ultrasonic sensor, check the relative humidity of the concrete slab to 40 % of its depth. A reading of 75 % RH or less indicates that the concrete slab is ready to receive the wooden floor; a reading between 75% and 85 % indicates that it is preferable to place a waterproof membrane before installing the wood floor. Never install a hardwood floor when moisture level is greater than 85%.

CALCIUM CHLORIDE TEST

Calcium chloride test (ASTM F 1869), thorough test. The Calcium Chloride Test works by measuring changes in weight of anhydrous calcium chloride crystals. A small plastic dish of crystals is sealed with a plastic tape. The entire dish is weighed on a gram scale prior to exposure, and the weight, date and time the test was started must be recorded. The lid is then opened, and the dish of crystals is carefully set down on the concrete for 60 to 72 hours. The dish is enclosed within a 7-by-10-inch cover, which is sealed to the concrete. During this time, the only source of moisture being absorbed by the crystals is what can evaporate out of the covered concrete surface area.

At the end of the test, the dome is removed and the lid is placed back on the dish and sealed. Again the dish is weighed on the gram scale and the date and time are marked. The change in weight is multiplied by a constant and divided by hours to provide an estimated rate of evaporation, in pounds (which is the equivalent weight of the water that evaporates out of a 1,000-square foot surface area during 24 hours). Water weighs 8.3 pounds per gallon. If the test reports 8.3 pounds emission, then one-gallon of water is leaving a 1,000-square foot surface area in 24 hours.

A conservative, but generally recommended, allowable amount of moisture emission as expressed by the calcium chloride test is 3.0 pounds per 1,000 square feet per 24 hours at the time of the installation of the flooring. A note of caution: Use care in dealing with the lid, removal of the dish, and weighing as exposure to the atmosphere will dramatically affect the results.

GENERAL INSTALLATION GUIDELINES

Use only moisture-cured urethane or rubber adhesive. Check and follow the manufacturer's recommendations for trowel size, and spread rate to ensure adhesive transfer to substrate and hardwood. Be sure to also check adhesive expiration date. Conduct a moisture test on concrete (refer to the concrete paragraph on the previous page). Test a small amount of adhesive on the concrete to ensure adhesion bonding. Be sure to use a metal trowel as the teeth in a plastic trowel will wear down and cause a difference in spreading rate. This will directly affect the hardwood's ability to adhere to the substrate. We recommend a "double glue" application. Using this method, the membrane will be glued to the subfloor, and the flooring glued to the membrane. This will give the best acoustic and stability performance. When flooring is glued directly on the subfloor it is called "simple glued". While simple glue systems work, they don't have the same acoustic ratings and stability as double glue systems.

NOTE: Our Solid Hardwood is only approved for glue down installation over wood subfloor.

PREPARATION INSTRUCTIONS

- Remove baseboards, quarter rounds and then screw down subfloors securely to avoid squeaking if necessary. The subfloor must be clean, dry, smooth and flat.
- Undercut any door-jambs on the bottom of the door frames if needed to permit a strip to be inserted under them.
- Clean the bottom of any footwear worn during installation.

RECOMMENDED ADHESIVES

- Bostik's Best, BST, Franklin 811, Bona AD-844 MS adhesives for engineered products work well following their installation guidelines for 3/4" (19mm) engineered products. Check with the adhesive manufacturer for applications used with radiant floor systems. Be sure to follow the manufacturer's installation instructions.
- Proper adhesive selection is important. All wood flooring adhesives mustbe elastomeric, which means they remain flexible and maintain their bond when there is movement in the installed flooring system.

LAYOUT & WORKING LINES

Working lines are guidelines drawn or marked on the subfloor. Some are critical measurements, such as the primary or secondary lines, while others can be placed as guides to stop nailing or spreading adhesive, or to aid in layout of the different parts of the floor. Working lines should be measured from the longest, straightest, continuous line in the room.

- On wood subfloors, measure off of subfloor seams or the longest, straightest, continuous wall in the room to find working lines.
- On concrete subfloors, measure off of the longest, straightest, continuous wall in the room to find working lines.
- We recommend using a chalk line to transfer working lines to the subfloor. To help prevent working lines from being erased or worn away use a quick-dry aerosol spray poly over the lines.
- When using the Trammel Point layout method, please follow NWFA guidelines.

GENERAL GUIDELINES

- Your starting location should be the longest and straightest wall within the room.
- Hardwood flooring must be installed across the joists at a 90-degree or 45-degree angle for support.
- Installation should be done under natural light conditions.
- Adequate expansion space must be envisioned for the installation of all mouldings. Different installation methods require different expansions space.
- If heavy tools or other objects are dropped on the floor, they will damage the flooring. Herwynen Sawmill Ltd. will not be held responsible for scratches, indentations, damage by neglect or any other damages caused by improper handling, storage, installation, and thereafter.

INSTALLATION INSTRUCTIONS

SUBSTRATE REQUIREMENTS

1. Inspect and identify type of subflooring. Wood subfloors or concrete subfloors.
2. Wood subfloors:
   a. All substrates must be sound and free from squeaks, sounds and vertical deflection.
   b. Subfloor thickness and floor joist/truss spacing requirements.
   c. Inspect subfloor for any defects and clean subfloor of any debris.
   d. Test compatibility or wood subfloor and flooring adhesive. Some types of flooring adhesives do not adhere to some high-performance OSB panels.
   e. Subfloor flatness: The standard for flatness on a wood substrate with a glue down installation method on a wood subfloor is 3/16" in 10', or 1/8" in 6'.
   f. Moisture test the subfloor in relation to the flooring being used. When testing for moisture, both the wood flooring and the subfloor must be evaluated.
   g. IMPORTANT: Never install a wood floor over a known moisture condition. A known moisture condition is one that you are aware of and could pose future damage to the flooring. It is common practice to always test for moisture regardless of conditions so that any unknown conditions can become known conditions, which then can be handled appropriately.
3. Concrete subfloors:
   a. Inspect integrity of concrete and is free of any debris or damages.
4. Check with the adhesive manufacturer recommendations for the following:
   a. Removal of any contaminates that may interfere with the adhesive.
   b. Concrete surface profile (CSP).
   c. Porous concrete substrates.
5. Subfloor flatness: The standard for flatness for a concrete subfloor with glue-down installation methods is 3/16" in 10' or 1/8" in 6'.
6. Moisture test concrete subfloor. Refer to our warranty regarding approved concrete moisture testing.
7. Follow adhesive manufacturer's instructions for proper use and moisture testing.

ADHESIVES

1. Proper adhesive selection is important. All wood flooring adhesives must be elastomeric, which means they remain flexible and maintain their bond when there is movement in the installed flooring system.
2. Please follow the adhesive manufacturer's recommendations as follows:
   a. Intended use and appropriate installation methods.
   b. Storage and handling.
   c. Flash time and working time.
   d. Trowel selection and size. Trowel size is dictated by the adhesive manufacturer.

INSTALLATION INSTRUCTIONS

1. Remove any existing base, shoe mould, or doorway thresholds.
2. Undercut door casings and jambs.
3. Start on your longest straightest wall in the room. Where possible begin the installation at a point opposite of the point of egress to minimize walking across a newly glued-down installed flooring.
4. Snap working lines parallel to the starting wall, account for necessary expansion space.
   a. Expansion space: is space based on material being installed at all vertical obstructions.
   b. Measure out the width of a hardwood strip plus 3/4" (for expansion). Mark this with a chalk line against which you will place the tongue of your starter strip. The 3/4" expansion will be needed around the perimeter of the room and/or at all vertical obstructions.
5. Lay out the hardwood strips on the floor as they will be installed, picking the straightest boards for the first two rows.
6. When installing glue down over wood subfloor all our Solid, Engineered and Enhanced products should be installed perpendicular to or on a 45° angle to the floor joists. **NOTE:** Our Solid Hardwood is only approved for glue down installation over wood subfloor.
7. An anchor row is beneficial for glue down installations. An anchor row is one that may be set the day prior to provide a stationary starter row.
8. This starter row should be secured to the subfloor to provide a stationary point to be pushed against, so flooring doesn't move during installation of the remaining floor.
9. Spread out the adhesive on the subfloor. Make sure you don't apply more than you can install flooring on before the adhesive sets up. The freshly applied adhesive must leave trowel marks/trowel ridges. Only apply adhesive up to your chalk line and not over it.
10. Cut off the last piece in your starting row, leaving the proper expansion space of from the wall and use it as your 1st piece or starter board for the 2nd row. It is best to not use a piece under 6"

(15 cm) as they tend to move out of position. Continue each row, engaging the groove into the tongue along the side 1st, then the end to be engaged 2nd. Try to distribute the long and short pieces while ensuring that no end joints are within 6" of each other to avoid getting a cluster of end joints in one area **(see Image 1)**. If any adhesive contacts the face of planks, use adhesive remover before it dries.

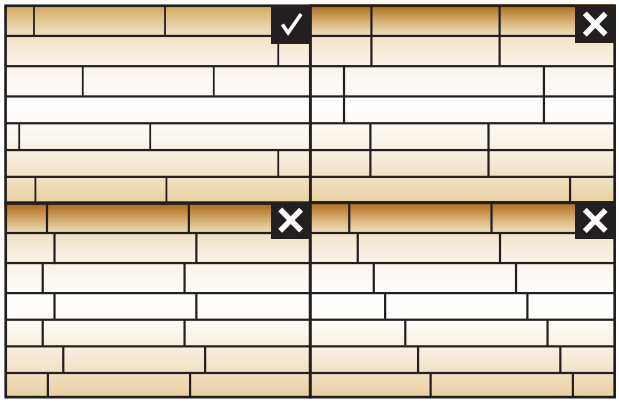
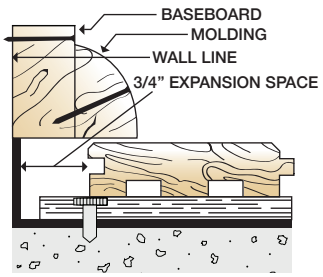


IMAGE 1

11. Ensure your first row is exactly on your chalk line.
12. The next step is to be racking your floor.
    a. Loose-lay the boards away from the secured row and where you have spread your adhesive. Be sure not to over spread adhesive or apply too thick and use the correct trowel.
    b. Try to distribute the long and short pieces while ensuring that no end joints are within 6" of each other to avoid getting a cluster of end joints in one area (see Image 1).
    c. Lay flooring into the adhesive, position the flooring and press down firmly.
    d. Boards should also be arranged based on the natural colour variations of the species to create a random appearance. When racking (or laying out the floor) prior to installation, be sure to work from multiple bundles or packages to ensure variation.
    e. Periodically pull flooring pieces immediately after installation to ensure correct glue transfer and coverage.
    f. **IMPORTANT:** Be sure to inspect all flooring pieces being installed for defects or damages. Once the board is installed, it is deemed acceptable by both the installer and/or homeowner.
    g. Install and distribute lengths randomly and pull from multiple bundles.
    h. Avoid H-pattern, stair step patterns or any discernible patterns where possible **(see image 1)**.
    i. End joints of adjacent boards should not be installed in close proximity to each other. In general, end-joint staggering row-to-row should be a minimum of twice the width of the flooring being installed **(see image 1)**.
    j. Periodically check your runs to ensure your installation is straight and not deviating from your working lines.
    k. The use of painters' tape or 3M Blue masking tape will help to keep your planks from moving out of position. Do not use any regular masking, duct, or electrical tapes as these products can leave a film on your new flooring. Apply tape 90 degrees to row direction with approximately a 15-16" (38 to 41 cm) long piece; or long enough for 3-4 rows wide. Lap over or curl up the tape at one end to allow for fast, easy removal. Place tape at 48" (1,20 m) apart or across the rows.
    l. Tapping blocks, straps, and pull-bars may be used to drive flooring tight during installation. Be certain to only use tools that do not damage the flooring and not use excessive force that can damage the flooring.
13. Finish the room by installing the rest of the flooring. The last board may need to be cut on your table saw. Remember to leave an expansion gap between the last row and the wall.
14. Give the adhesive time to setup by avoiding any traffic for 24 hours or as specified by the adhesive manufacturer. If this is unavoidable, use a kneeler board to help distribute the weight and movement.
15. Clean up your trowel and hands using the adhesive remover.
16. Spline/Slip-Tongue is used anytime the flooring direction changes and to maintain tongue and groove with the flooring system, such as using a centre layout installation. Follow NWFA guidelines for using a spline/slip-tongue.
17. Baseboards and quarter-rounds should be nailed to the wall only and never through the hardwood strips or into the sub floor **(see Image 2)**. When you're done, clean the floor as is described in the Care & Maintenance instructions.

IMAGE 2



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