

INSTALLATION GUIDE; ENGINEERED & HARDWOOD FLOORING (COMMERCIAL & RECLAIMED)

ATTENTION! INSTALLER/OWNER RESPONSIBILITIES

Beautiful hardwood floors are a product of nature and, therefore, they will show variations in color, grain, texture, and appearance. These wood floors are manufactured in accordance with accepted industry 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, finish and quality **BEFORE** installing it. If there are questions of acceptability, contact the seller immediately.
- Prior to installation of any hardwood flooring product, the installer must determine that the job/site environment and the sub-floor involved meet or exceed all requirements as stipulated in installation instructions and National Wood Flooring Association (NWFA), recommendations.
- Manufacturer accepts no responsibility for product failure resulting from sub floor or job site environment deficiencies.
- The installer/owner has final inspection responsibility for grade, manufacture and factory finish. He/she must use responsible selectivity and hold out or cut off pieces with defects, whatever the cause.
- The use of stain, filler or putty during installation should be accepted as normal procedure.
- When flooring is ordered, it's suggested that 10% be added to the actual square footage needed for cutting allowance on straight-run installations. For installations with islands, irregular perimeter walls, 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's very important to allow extra for cutting since ordering additional material later will delay your project and possibly result in mismatches of floor color.
- Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece.
- Once a piece of flooring has been installed, it is deemed to have been acceptable; thus no claims will be honored for finish, milling or defects.

PRE-INSTALLATION PROCEDURES — Job Site Inspection

- Hardwood flooring should be one of the last items installed on a job. All work involving water or moisture (concrete, plumbing, acoustical ceilings, drywall taping, painting, stone or tile installations, etc.) should be completed prior to wood flooring being installed.
- This product can be installed on, above, or below grade. Glue-down installations of engineered flooring only are recommended for below grade.
- Below-soil 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.
- The building should be closed in with all outside doors and windows in place.
- Exterior grading should be complete with surface drainage directing water away from the building. All gutters and down spouts should be in place.
- Basements and crawl spaces must be dry and well ventilated in accordance with NW recommendations. Black 6 mil plastic is required to cover soil in a crawl space.
- Sub-floor must be checked for moisture content using an electronic moisture meter or calcium chloride test.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have a consistent room temperature of 60-80° F and humidity of 30-50% for 14 days prior to installation, during installation, and until occupied, to allow for proper acclimation.
- Flooring must also 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. As of this publication, a maximum of 4% difference in moisture content between flooring and sub floor is required.

PRE-INSTALLATION PROCEDURES — Sub-Floor Guidelines and Preparation

ACCEPTABLE SUBSTRATES

- Unsealed Concrete slabs- minimum 3000 psi. It is the installer's responsibility to test or verify that the slab has no contaminants such as sealers, paint over-spray, etc.
- Appropriate OSB (23/32") or plywood sub-floor (3/4"). When installing approved sub-floor, refer to specific structural panel and manufacturer's instructions for joist spacing and nailing requirements.
- Over existing wood floors, install at 90 degrees.
- Well bonded vinyl. Do not install over perimeter vinyl or urethane vinyl, or any waxed surface.

SUB-FLOOR INSPECTION

All sub-floors and sub-floor systems must be structurally sound and must be installed following their manufacturer's recommendations. Our warranties DO NOT cover any problems caused by inadequate substructures or improper installation of said substructures. See the NWFA Guidelines in the NWFA Technical Reference Manual.

- **CLEAN** - your sub floor must be free of wax, grease, paint, oil, sealers and other debris. Make sure there are no loose areas and that the sub floor is structurally sound.
- **LEVEL/FLAT** - within 3/16" in 10' radius and/or 1/8" in 6' radius. Sand high areas or joints. Low areas can be filled with fillers that are recommended by the adhesive manufacturer, if leveling concrete. Other leveling products are available for wood sub-floors. Sub floor irregularities and undulation may cause any wood flooring installation to develop hollow spots between the flooring and the sub-floor. These hollow spots are not the result of any wood flooring manufacturing defect and are not covered by the Warranty.
- **STRUCTURALLY SOUND** - on wood sub-floors, nail or screw any loose areas that squeak. Replace any water damaged sub flooring or underlayment.
- **DRY** - Moisture content of plywood sub floor must not exceed 12% on a wood moisture meter or read more than a 4% difference than moisture level of product being installed. Moisture content of a concrete sub floor must not exceed 4.5 on a Tramax meter or 3 lbs with a calcium chloride test. If moisture exceeds 4.5 on a Tramax meter, DO NOT lay the flooring. Note: Bostik and Sika manufacture membranes compatible with their urethane adhesives to reduce vapor emissions of concrete. It is recommended if using these products to follow the manufacturer's instructions.

SUB-FLOOR DETAILS

- **CONCRETE SLABS** - you can glue GWC Engineered flooring directly to the concrete. All concrete sub floors must be tested for moisture content. Initial moisture testing can be done with a Tramax Meter, or a Calcium Chloride test. Moisture should not exceed 4.5 on a Tramax Meter or 3lbs per 24 hours with a calcium chloride test. Initial testing can be done using an electronic meter as a survey tool. Final acceptance should be based on a calcium chloride test before proceeding with the installation. Test several areas, especially near exterior walls and walls containing plumbing.
- **WOOD TYPE FLOORS** - make sure sub floor is dry and well nailed or screwed down per manufacturer's recommendations to avoid squeaking or popping before the floor is installed. Level any raised edges by sanding. When installing over old wood floors, install the new flooring at a 90° angle to the sub floor. Moisture content of wood sub floors should be between 6-12% Moisture Content. In general, wood or plywood sub floors should not exceed 12% moisture content or 4% moisture content difference between wood flooring and sub-floor.
- **RESILIENT TILE & RESILIENT SHEET VINYL** - make sure the vinyl or tile is well bonded to the sub floor.

If vinyl or tiles are loose, crumbled, or in poor condition; remove these items following state or local guidelines. (Note: Do not sand any resilient products, since they may contain asbestos fibers, which may be harmful.) If the tiles or sheet goods are well bonded, clean the surface thoroughly with a good quality household detergent. If vinyl appears to have a wax coating, you must remove wax with an appropriate floor wax stripper. Allow ample drying time.

FINAL ROOM PREPARATIONS

As part of your sub floor preparation, remove any existing base, shoe molding or doorway thresholds. These items can be replaced after installation of the floor. All door casings and jambs should be notched out or undercut to allow for expansion of the floor and to avoid difficult scribe cuts.

Important: Wood working is inherently dangerous. Please follow all tool Manufacturer's safety recommendations, common sense, and industry standard safety precautions.

GLUE DOWN INSTALLATION

TOOLS AND ACCESSORIES NEEDED FOR INSTALLATION

Bostik or Sika Urethane Adhesive for Glue Down Installations. Use with approved membrane product, when required by moisture conditions.

Notched Trowel, per adhesive manufacturers requirements Hammer Hand or Power Saw Chalk Line Mineral Spirits and Clean Rags (NEVER use Lacquer thinner) Electronic Moisture Meter/ Calcium Chloride Test Kit, Broom and Vacuum

STEP 1: ADDITIONAL SUB-FLOOR INSPECTION AND PREPARATION

Surface areas requiring patching or leveling must be done using Bostik Fast Patch 102, SL-150, SL-155, or SL-155 Fast Set. Adhesive Manufacturer's recommendations and instructions need to be followed. Note: If a moisture membrane is required allow additional time for curing. The adhesive manufacturer's recommendations and instructions need to be followed.

STEP 2: MARKING YOUR STARTING LINE

We recommend you install your flooring parallel to the longest outside wall in the room. Measure out from wall 4" for 3 1/2" products, 5 3/4" for 5 1/4" products, etc. Snap a chalk line parallel to the wall. Allow at least 1/2" room for expansion around the perimeter of the room. Starter blocks may be inserted between the wall and the first row to prevent movement as the rest of the flooring is being installed.

STEP 3: SPREAD THE ADHESIVE

Before use, cover areas of trowel that are not used to spread adhesive with removable blue tape. After use, simply tear off tape before material cures. Clean remainder of trowel with a dry cloth, mineral spirits or adhesive cleaner. The urethane adhesive should not be applied if sub floor is below 55F degrees. Spread a sufficient amount of adhesive with the trowel in an area that is to be covered. Hold trowel at a 45-degree angle. The trowel will leave ridges of adhesive and very little adhesive between the ridges. This will give you the recommended spread rate.. OPEN TIME MAY VARY DUE TO INDIVIDUAL CLIMATE CONDITIONS. Humidity must be controlled between 30-50% for successful performance during and after installation. During the installation, occasionally remove a flooring unit 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 urethane adhesive label for open time and tack time. Ensure the correct set up time is utilized prior to installing flooring.

STEP 4: LAYOUT STARTER ROW

Lay one row of plank along the entire length of the working line. Place TONGUE edge of 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. If you are installing over wood type sub floor, you may use small finishing nails to hold the first row in place. Set and fill the nail holes with latex filler, which is manufactured to blend with your flooring.

STEP 5: 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 adjust into final position. Planks should be butted to the adjoining plank. A random mix of the various surface-graining configurations is suggested to enhance the natural beauty of the floor. The flooring should be installed from several bundles at the same time to ensure a good color and shade mix. Note: When using the Wet- Lay Installation Method, flooring is placed into “wet” adhesive and workers should not walk on the newly installed flooring, but work with their feet on the sub floor. 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 tap the planks on the edge until they are pulled into proper position. Check for a tight fit between all edges and ends of each plank. End joints of adjacent rows should be staggered a minimum of 8 inches. Immediately clean up any adhesive on pre-finished flooring with a soft cloth and mineral spirits before drying or curing (Be careful not to harm finish). NEVER USE LACQUER THINNER OR SIMILAR SOLVENTS. Rolling is recommended for all installations. Flooring that is not flat should be tacked, weighted, or rolled to ensure proper contact between the flooring and the substrate. 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. It is not recommended to work on the newly installed flooring. If it is absolutely necessary to work on the newly installed flooring, use a kneeler board. The kneeler board will distribute your weight evenly over a wider area. Keep the flooring

clean of dust and debris as you work. DO NOT USE ANY TYPE OF TAPE TO TEMPORARILY HOLD FLOORING IN PLACE DURING INSTALLATION; THIS CAN CAUSE DAMAGE TO THE SURFACE OF THE FLOOR.

STEP 6: FINAL ROW INSTALLATION

When you get to the far wall you may have to cut the width of the final row to fit it against the wall, be sure to leave at least 1/2" between the last row and the wall. A larger gap can be used if base shoe or base mouldings are being installed as part of the project. Use a "Last Board Puller" to snug the last row of planks with the completed second to last row.

STEP 7: COMPLETE THE JOB

Install any transition pieces that may be needed, such as reducers and nosings. Reinstall your base and/or base shoe mouldings. Be certain to nail moulding into the wall, not the floor. (Note: All finish pieces should be ordered with the flooring to insure that they match the finish).

STEP 8: CLEAN UP AND PROTECTING THE NEW INSTALLATION

As you are installing the floor, clean the adhesive residue off the floor with mineral spirits and a clean cloth. Avoid heavy foot traffic on the flooring for at least 24 hours. The adhesive will be fully cured in usually 8-12 hours and should not be covered until then. The floor should be checked for any adhesive once again. Removed adhesive with mineral spirits and a clean cloth before the floor is covered. We recommend covering the floor with Rosin Paper. If heavy trades will be occupying the home, we recommend that plywood or masonite be placed on top of the rosin paper to prevent the floor from being damaged.

NAIL DOWN INSTALLATION

TOOLS AND ACCESSORIES NEEDED FOR INSTALLATION

Moisture retarder of 15 lb Asphalt Paper or Asphalt Laminated Kraft paper, per NWFA Guidelines Power nail Model 50P or 50M. Use manufacturer's recommended 18gauge cleats.

Hammer

Hand or Power Saw

Chalk Line

Electronic Moisture Meter

Broom and Vacuum

STEP 1: UNDERLAYMENT

Cover sub floor with Moisture retarder. Roll paper over the clean substrate. The next row of paper should be rolled to overlap 3-4". This process will keep dust/dirt from hardwood and retard the moisture from below.

STEP 2: SET UP EQUIPMENT

Inspect Equipment prior to use. Test on scrap material first. When used improperly, the cleats can damage the flooring. Parts that engage the plank must not have any exposed sharp edges that can scratch or damage the flooring. Make sure the tool's adapters seat properly in the tongue of the flooring. Note: Use only manufacturer's recommended length, 15gauge cleats. Make sure pressure is set according to manufacturer's recommendations.

STEP 3: MARKING YOUR STARTING LINE

We recommend you install your flooring parallel to the longest outside wall in the room. Measure out from wall 4" for 3 1/2" products, 5 3/4" for 5 1/4" products, etc. Snap a chalk line parallel to the wall. Allow a minimum of at least 1/2" at all vertical surfaces such as perimeter walls, posts, and islands.

STEP 4: LAYOUT STARTER ROW

Lay one row of plank along the entire length of the working line. Place groove edge of flooring toward the starting wall. Use small finish nails for top nailing the edge closest to the wall. Nail the tongue edge of the flooring in the normal manner. Space fasteners at 6"-8" apart.

STEP 5: 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 inches in adjacent runs. A random mixing of the various surface-graining configurations and color are suggested to enhance the natural beauty of the floor. Floor should be installed from several bundles at the same time to ensure a good color and shade mix. Always tap against the tongue, tapping the groove may damage the surface or edge. Nail flooring through the tongue on a 45 degree angle (blind nailing) with the proper adapter. Install the cleats no further than 1" from the end of each board and 6" to 8" on center. Keep the flooring clean of dust and debris as you work.

STEP 6: FINAL ROW INSTALLATION

When you get to the far wall you may have to cut the width of the final row to fit it against the wall, be sure to leave at least 1/2" between the last row and the wall. The tongue for the final row will need to be removed for a clean fit. Use a "Last Boards Puller" to snug the last row of planks with the completed second to last row. You again will need to face nail close to the wall to secure the flooring.

STEP 7: COMPLETE THE JOB

Install any transition pieces that may be needed, such as reducers, thresholds, etc. Reinstall your base and/or quarter round mouldingS. (Note: All finish pieces should be ordered with the flooring to insure that they match the finish.)

STEP 8: CLEAN UP AND PROTECTING THE NEW INSTALLATION

Flooring should be kept clean during and after the installation. All areas that have been completed should be covered with protective rosin paper to prevent damage to the finish. If heavy trades will be occupying the home, we recommend that plywood or masonite be placed on top the rosin paper to prevent the floor from being damaged. Never use plastic or polyethylene sheeting.

FLOATING INSTALLATION

(Flooring 5 1/4" or wider only) TOOLS AND ACCESSORIES NEEDED FOR INSTALLATION Titebond Tongue and Groove glue

½" Spacers

Hammer

Hand or Power Saw

Chalk Line

Mineral Spirits and Clean Rags (NEVER use Lacquer thinner)

Electronic Moisture Meter/ Calcium Chloride Test Kit

Broom and Vacuum

Moisture barrier

Resilient underlayment

STEP 1: ADDITIONAL SUB-FLOOR INSPECTION AND PREPARATION

Surface areas requiring patching or leveling must be completed and dry before beginning installation. Install a moisture barrier of 30/30/30 laminated kraft paper or 15lb felt paper over the wood subfloor. Use 6-8 mil Polyethylene for concrete subfloors. This will retard moisture from below. Install the moisture barrier parallel to the direction of the flooring and allow a 3" over run at the perimeter. Make sure each run overlaps the previous run by 6" or more. If using, install resilient underlayment parallel to the moisture membrane, following manufacturer's instructions. Note: some resilient underlayments contain a built in moisture barrier, eliminating the need for a separate moisture barrier.

STEP 2: MARKING YOUR STARTING LINE, INSTALLING FIRST ROW

Once the moisture barrier and the resilient underlayment (if used) have been installed over the subfloor, the jobsite is ready for the flooring. At the starting wall establish a 1/2" expansion space along side and end walls with the use of spacers. If the starting wall is out of square, it is recommended the first row of boards be scribed to allow for 1/2" of

expansion and a straight working line.

STEP 3: INSTALLING FIELD FLOORING, SIDE AND END GLUING

The flooring must be side and end glued using Titebond T&G glue. Apply in 8" long sections with 12" between each 8" section. Each 8" glue line should be flush to the top of the groove. Fully glue every end joint. If any excess glue squeezes up to the finished surface, wipe off using a paper towel or cloth. Install the first row using the appropriate expansion space with the groove side facing the wall. The subsequent rows are installed, side and end glued, tapped together with a hammer and tapping block to prevent damage to the protruding tongue. The tapping block should only be used against the tongue. Use only flat side of tapping block against tongue. Do not tap on groove side as this will cause damage! Check for tight fit on sides and ends. Stagger 18" between end joints of adjacent board rows. End joints should not repeat visually across installed floor. Never install without some end joints in the floor.

Note: Please refer to section 'large surface areas' for more information about installation in large areas.

STEP 4: FINAL ROW INSTALLATION

Most often the last row does not fit in width. When this occurs, follow this simple procedure: lay a row of boards, unglued, tongue toward wall, directly on top of last installed row. Take a short piece of board with the face down and the tongue side against the wall. Draw a line with a pencil along the row moving down the wall. The resulting line gives the proper width for the last row which, when cut, can then be wedged into place using a crow bar or TarkTool. Make sure when the installation is complete that the spacers are removed and the expansion space is covered with an appropriate molding. Always attach the trim to the wall or vertical object and never to the flooring.

STEP 5: COMPLETE THE JOB

Install any transition pieces that may be needed, such as reducers and nosings. Reinstall your base and/or base shoe mouldings. Be certain to nail moulding into the wall, not the floor. (Note: All finish pieces should be ordered with the flooring to insure that they match the finish).

STEP 6: CLEAN UP AND PROTECTING THE NEW INSTALLATION

As you are installing the floor, clean the adhesive residue off the floor with mineral spirits and a clean cloth. Avoid heavy foot traffic on the flooring for at least 24 hours. The adhesive will be fully cured in usually 8-12 hours and should not be

covered until then. The floor should be checked for any adhesive once again. Removed adhesive with mineral spirits and a clean cloth before the floor is covered. We recommend covering the floor with Rosin Paper. If heavy trades will be occupying the home, we recommend that plywood or masonite be placed on top of the rosin paper to prevent the floor from being damaged

LARGE SURFACE AREAS

For both glue down and floating installation in projects with large surface areas it is always advised to accommodate the expansion joints in the structure by allowing the same expansion space in the flooring. When the flooring area exceeds 10 meters (33') in width and/or 30 meters (100') in length, additional expansion space must be incorporated into the field, as well as at the perimeter and all vertical obstructions. For glue down installations this can be accomplished with washers or plastic string inserted between every 4 to 6 rows. Be sure to remove the washers or string when installation is complete.

For floating installations allow $\frac{1}{4}$ " expansion for every 10 lineal feet of flooring in either direction but never less than $\frac{1}{2}$ ".

INSTALLATION OVER RADIANT HEATING

SPECIAL NOTES ABOUT RADIANT HEATING INSTALLATIONS:

Floor widths over 8" are not recommended for use over Radiant Heat and will void warranty.

- GWC engineered flooring is covered by a Warranty. However, warranty coverage may be lost due to failure to strictly follow all installation instructions and recommendations or the use of improper materials or tools. READ ALL INSTRUCTIONS CAREFULLY before beginning installation.
- GWC recommends the use of a humidifier and outside thermostat as part of your radiant heating system to maintain the interior temperature and humidity conditions within the recommended limits. Heating pipes or elements must be covered with a minimum of $1\frac{1}{4}$ " of concrete or be placed a minimum of $\frac{1}{8}$ " below bottom side of plywood. The flooring should never be in direct contact with any heating element.
- Radiant installations require strict compliance with all job site inspections and start-up of the radiant heating system.

STEP 1: ADDITIONAL SUB-FLOOR INSPECTION AND PREPARATION FOR RADIANT INSTALLATION

The relative humidity at the job site should reflect normal living conditions. Temperature settings at the time of installation should be within 15 degrees F of these normal living conditions. The 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 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. Three or four days before flooring installation, the heating system must be reduced to a suitable temperature (about 65° F). If there are any high spots on the concrete sub-floor, care must be taken not to damage the radiant system during leveling.

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 and can range from days to weeks. See current NWFA guidelines. As of this publication, a maximum of 4% difference in moisture content between flooring and sub floor is required.

STEP 3: INSTALLATION

The flooring can either be Glued Down or Floated. See the previous instructions for specifics on installation.

STEP 4: AFTER INSTALLATION

Approximately two days after installation is complete, gradually (over a period of one week) raise the temperature of the heating system to its desired operating level. Surface temperature of flooring should never exceed 85° F.