

PRE-FINISHED, 3/4" & 5/16" SOLIDS, STRIP OR PLANK

THE FOLLOWING INSTALLATION INSTRUCTIONS GUIDELINES ARE AN APPENDIX OF THE SHAW HARDWOODS WARRANTY FOR APPLICABLE PRODUCTS.

PLEASE READ AND REVIEW THE ENTIRE INSTALLATION INSTRUCTIONS AND CARE AND MAINTENANCE GUIDELINES BEFORE PROCEEDING WITH THE ACTUAL INSTALLATION. FAILURE TO MEET NECESSARY REQUIREMENTS STATED WITHIN THE INSTRUCTIONS WILL VOID THE SHAW WARRANTY COVERAGE. THESE INSTRUCTIONS AND GUIDELINES ARE INTENDED FOR USE WITH SOLID HARDWOODS ONLY. (Refer to applicable warranty appendix for installation instructions and care & maintenance guidelines when installing engineered hardwoods.)

IMPORTANT INFORMATION BEFORE YOU BEGIN

OWNER AND INSTALLER RESPONSIBILITIES

Hardwood flooring is a beautiful and unique product of nature, which is characterized by distinctive variations in grain and color. These natural variations in color and grain are not flaws, but are a part of the natural beauty and uniqueness of hardwood flooring. (These inherent variations should be expected and serve to enhance the natural beauty and enduring charm.) Shaw Hardwood 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 product quality. This inspection of all flooring should be done **before** installation. Carefully examine the flooring for color, fit, finish and quality before installing it. Use reasonable selectivity and hold out or cut off pieces with glaring defects whatever the cause. If material is not acceptable, contact your Shaw Hardwood Flooring™ dealer immediately.
- Before beginning the installation of any hardwood flooring product, the installer must determine that the environment of the job site and the condition and type of the subfloor involved is acceptable, insuring that it meets or exceeds all requirements which are stipulated in the Shaw Hardwood Flooring™ installation instructions which follow. Shaw Industries, Inc. declines any responsibility for job failure resulting from or associated with inappropriate or improperly prepared subfloors or job site environment deficiencies.
- The use of stain, filler, or putty stick for the correction of minor defects during installation should be accepted as normal procedure.
- When Shaw Hardwood Flooring™ is ordered, a 5 - 10% waste factor, depending on layout, must be added to the actual square footage amount needed. (Diagonal, herringboned or bordered installations will require a higher waste percentage.)

INSTALLATION SITE REQUIREMENTS

JOB SITE INSPECTION

- All areas of the jobsite should be thoroughly evaluated for crawl space conditions, outside water run off control, including downspouts, site drainage field and any potential areas of pooling water.
- All jobsites should be thoroughly evaluated for subfloor conditions including levelness and proper moisture conditions. Wood subfloors should also be evaluated for structural soundness.
- Moisture tests should be completed before and after the hardwood has been acclimated, to insure that the job site conditions meet all requirements.
- HVAC systems should be evaluated to insure they are capable of maintaining the required indoor climate conditions necessary for wood flooring installations. Heating and air systems should be fully operational, and capable of maintaining a consistent room temperature at 60° - 80° F; and relative humidity conditions within the range of 35 to 65 percent.

IMPORTANT PRECAUTIONS

- 3/4" & 5/16" SOLID FLOORING IS APPROVED FOR ON GRADE OR ABOVE GRADE INSTALLATION ONLY!!
- 3/4" & 5/16" SOLID FLOORING **CANNOT** BE INSTALLED OVER RADIANT HEATED SUBFLOOR SYSTEMS.
- DO NOT INSTALL SOLID WOOD FLOORING BELOW GRADE LEVEL!!
- 3/4" SOLID WOOD FLOORING IS NOT CONSIDERED ACCEPTABLE FOR GLUE-DOWN INSTALLATION. (ADHERED)
- 5/16" SOLID WOOD FLOORING IS ACCEPTABLE FOR GLUE-DOWN INSTALLATION. (ADHERED)

Application of Moisture Barrier systems over concrete subfloors:

Follow all manufacturers' instructions for the installation of this type of product. Use only Moisture Protection and Adhesive systems that are designed to be used together.

Some helpful hints include:

- Make certain that the moisture Barrier System chosen is compatible with the adhesive system to be used.
- Apply the moisture barrier as directed by the manufacturer. Do not allow puddles to form and dry.
- Floor products may not be applied on top of this product for at least 24 hours. This time period may be longer for certain products or climate conditions.
- For concrete sub-floor applications it is required and is the responsibility of the installer to test for sub-floor moisture emissions before and after applying this type of product, using the (ASTM 1869-98) calcium chloride test method; to insure that moisture emissions are within the recommended range of the floor-covering manufacturer.

ACCLIMATION

- The installation site should have been consistently maintained at room temperatures of 60° - 80° F and a constant relative humidity level range of 35 - 65 % for a minimum of 5 days prior to the hardwood delivery, and acclimation period required for any Shaw Hardwood Flooring™ product. Solid Hardwood requires a 72 hour minimum acclimation period at the job site, prior to installation.
- Flooring should be at the climate controlled job site a minimum of 72 hours prior to the start of installation.
- During acclimation, do not store flooring products directly upon on grade concrete or next to outside walls. Cartons should be placed in the dry installation area. Stack the cartons flat in stacks 3 or 4 high, away from heat vents, out of direct sun light, as close to the center of the structure as possible. Leave spaces between the stacks to insure proper airflow around the cartons.
- Flooring should not be delivered until the building has been closed in and cement work, plastering, painting and other materials are completely dry. Concrete and plaster should be cured and at least 60 to 90 days old. Check basements and under floor crawl spaces, to be sure that they are dry and well ventilated to avoid damage caused by moisture. Bare ground in crawl space areas, should be covered with overlapped black, 6-8 mil polyethylene plastic sheeting.
- In new construction, Shaw Hardwood Flooring™ should be one of the last items installed. All work involving water or moisture (plumbing, acoustical ceilings, dry wall taping, etc.) should be completed prior to wood flooring being installed.
- When installing 2-1/4" to 3-1/4" Shaw Hardwood over wood or wood based subfloors, there should be no more than a 4% difference in moisture content between the subflooring and the Hardwood flooring materials to be installed.
- When installing 3-1/2" or wider Shaw Hardwood over wood or wood based subfloors, there should be no more than a 2% difference in moisture content between the subflooring and the Hardwood flooring materials to be installed.

SHAW SOLID HARDWOODS SUBFLOORING REQUIREMENTS

IMPORTANT NOTE

As flooring manufacturers and wholesalers, we are unable to specifically evaluate each type of Engineered Wood Subflooring System. Spacing and span lengths, as well as their engineering methods and expected usage specifications, are the responsibility of the builder, engineer, architect and consumer; who are better able to evaluate their expected results, based on site-related conditions and floor covering performance requirements.

In all cases, the decking material used as subflooring must be rated at or above the expected beam spacing of the system. (i.e.: for an engineered joist system spaced at 24 inches on center with a 26 foot rated span length; the decking material used must also be rated for 24 inches on center with a 26 foot span length.) Engineered subflooring systems may allow for wider spacing of engineered beam support systems; and alternative subfloor decking materials, while also providing equal performance characteristics to the traditional subfloor systems discussed below.

The general information provided below describes common, non-engineered wood joists and subfloor decking systems.

Approved Joist Constructed Subfloor Types:

1. APA approved **minimum** - 5/8" thickness, 3/4" or thicker exterior grade plywood is preferred, on 16" centered 2"x10" joists.

NOTE: When installing and fastening approved plywood subfloor decking, please follow the specific structural panel manufacturer's installation instructions.

2. 3/4" (23/32") OSB on 16" center, 2"x10" floor joists properly nailed. (Remember, when installing hardwood over any joists and/or truss systems that are spaced wider than 16" on center, it may be necessary to add an additional layer of subflooring or use additional cross bracing to stiffen the deck system, reducing excessive deflection if the decking being used is **not** rated for the increased joist spacing.)

All Subfloors must be:

- **CLEAN** - Scraped or sanded, swept, free of wax, grease, paint, oil and other debris.
- **SMOOTH/FLAT** - Within 1/8" in a 6' span. Sand high areas or fill low areas with cement base leveling compound - no less than 3000 psi rating.
- **STRUCTURALLY SOUND** - Nail or screw any loose areas that squeak or reveal movement. Replace any damaged subflooring or underlayment.
- **DRY** - Moisture content of wood subfloor **must not** exceed 12% prior to installation of wood flooring.
- **MOISTURE CONTENT BALANCED** - Wood based subfloors and the wood flooring to be installed must be within a 4% range of each other's moisture content for strip flooring and a 2% range of each other's moisture content for plank flooring.

Remember: Moisture testing results must be verified both before and after, the wood has been acclimated, and all other job site requirements have been met. Test the moisture of the wood substrate using a calibrated (pin type) moisture meter approved for testing wood moisture content.

Important Notes:

- All subflooring and underlayments should be spaced a minimum 1/8" apart for expansion requirements.
- Hardwood installations should not be parallel to the floor joists, or on joist spacing that exceeds 19" unless the subfloor has been properly stiffened with additional layers of subflooring to eliminate deflection. Always install flooring perpendicular to the floor joists whenever possible.
- Any additional layers of subflooring or underlayments required should be installed overlapping the seam areas of the base subflooring.
- Do not install over nailed floors that exceed 3-1/4" in width. Wide width floors must be overlaid with plywood.
- When installing over existing wood floors parallel with the flooring, install an additional 1/4" layer of plywood to stabilize the flooring, or install the new wood floor perpendicularly to the previous flooring.
- **Remember:** Moisture tests should be completed before and after the hardwood has been acclimated, to insure that the job site conditions meet requirements.

Lightweight Aerated Autoclaved Concrete (AAC):

Do not assume that aerated autoclaved concrete subfloor panels are suitable for Glue-down (adhered), sleeper system, or attached plywood subfloor treatments sometimes used over normal concrete. Always obtain written approval from the Aerated autoclaved concrete manufacturer before installing solid hardwood over this type of subfloor system.

Acoustic Concrete (Gypcrete):

Due to large quantities of gypsum, that may hinder the adhesive's ability to properly bond, acoustic concrete must be primed with the concrete manufacturers recommended primer/surface hardener. The concrete must have a minimum compressive strength of 2500 PSI. Always obtain written approval from the concrete manufacturer before installing solid hardwood over this type of subfloor system.

Acoustic Cork:

Make sure cork is level and permanently bonded to the sub-floor with the adhesive recommended by the cork manufacturer. The minimum density for cork underlayment is 11.4 lbs/cubic foot, with the maximum density being no more than 13 lbs/cubic ft. Before using cork underlayment, the concrete surface must be sealed using the appropriate sealer (as per the sealer manufacturers' recommendations.) Cork must consist entirely of pure cork with polyurethane binder, and should be no more than 1/4" thick.

Ceramic, Terrazzo, Slate & Marble:

It is the installers' responsibility to ensure that all the above products are securely bonded to the sub-floor, and that all gaps that exceed 1/8" must be filled with a cementitious leveling compound. Any area containing the leveling compound must be dry prior to wood flooring installation. Perform all appropriate moisture tests.

Staple-Down over Resilient Tile, Resilient Sheet Vinyl & Cork Filling:

Ensure that the vinyl or tile is full spread adhesive and properly bonded to the sub-floor. Do not install over more than one layer, which does not exceed 1/8" thickness over a suitable sub-floor. In the event that the vinyl or tiles are loose, crumbled, or in poor condition, install an underlayment directly over the sheet vinyl or vinyl tiles. Be advised that as tiles age they become brittle, make sure that the staple will penetrate these tiles without breakage. Remove these products if necessary.

VAPOR EMISSIONS TESTING FOR CONCRETE SLABS FOR ADHERED (GLUE DOWN) OR FLOATING INSTALLATIONS

Moisture Meters:

Electronic Moisture Meters are to be used as they are designed, which is to calculate the percentage moisture content of the concrete slab and indicate whether additional testing is required. Calibration procedures can vary depending on what brand of meter is used. Always adhere to the appropriate manufacturer guidelines for whatever brand of meter that is being used. Most meters display a reading table that indicates a "danger zone", to let the tester know that a quantitative Calcium chloride test is necessary to determine the amount of moisture emissions actually moving through the slab; (and potentially into the installed flooring). This is important to know so that appropriate steps are taken to resolve the vapor emission problem before hardwood floors can be installed successfully.

Readings of 3.5 to 4 percent moisture content indicates the need to perform quantitative moisture emissions testing.

Concrete Moisture Emissions Testing:

The quantitative test to measure moisture vapor emissions from concrete slab constructions is the **ASTM F 1869**, "Standard Test Method for Measuring Moisture Vapor Emission Rate of concrete subfloor using Anhydrous Calcium Chloride". This test is commonly called the "calcium-chloride test". The time period for the test is 60-72 hrs, with three test domes required for the first 1000 sq. ft, and an additional test dome required for each additional 1000 sq. ft. of concrete subfloor area involved. The acceptable reading from the test must not exceed **3lbs. / 24hrs. / 1000 sq. ft.**, for hardwood flooring installations as calculated following the testing procedures included with the test kits.

PH (Alkalinity) Testing:

It is also a requirement that a pH test be performed to determine the acid/alkalinity content in the concrete slab surface. Tests should be conducted according to **ASTM F 710**. The reading scale is 0-14. High readings indicate alkalinity, while lower readings indicate acidity. The acceptable range is 6-9, before installations should proceed. High or low readings indicate that there is, or has been moisture transmitting in and through the slab within the previous year.

This test is especially important for direct glue down engineered hardwood installs to insure that the wood adhesive performs correctly. It is also a good backup test to follow the Calcium Chloride test because it is possible to get a low reading from a Calcium Chloride test in a dry season, and then have high vapor emissions during a wet/rainy season.

If you have determined that high moisture is present, a Calcium Chloride and pH Alkalinity Test are mandatory, to accurately determine the amount of moisture emissions and the PH level in the concrete slab, so that appropriate corrective actions can be taken.

- Perform a Calcium Chloride test according to the test kit manufacturer's instructions. The maximum acceptable reading is 3-lbs. /24 hours/1000 sq. ft for moisture emissions.
- Perform a pH Alkalinity Test according to the test kit manufacturer's instructions. A pH reading of **6-9** on a pH number scale of 1-14 is acceptable.
- If the test results exceed these numbers, the concrete slab should be sealed with an appropriate sealer to correct conditions to meet the flooring manufacturer recommendations.
- Any sealer system chosen must be compatible with the adhesive that will be used if the hardwood flooring is to be adhered (glued down).

Important: Do not install any Shaw Hardwood Flooring Product using the glue down installation method over any vinyl asbestos flooring, vinyl composition tile, linoleum, asphalt tile, ceramic or stone tiles, carpet, or vinyl sheet products. Use a Shaw Hardwood that is rated for the Floating Floor Installation Method instead.

IMPORTANT:

ALL SUBFLOORS MUST BE LEVELED TO WITHIN 1/8" IN A 6 FOOT SPAN; OR 3/16" IN A 10 FOOT SPAN BEFORE ANY SOLID HARDWOOD INSTALLATION CAN BEGIN!

INSTALLATION PARAMETERS

Note: 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. Plate in contact with floor must be smooth and free from nicks or scratches.

Important: Set air compressor to 70 - 80 PSI to start, (or follow specific manufacturer's suggested PSI setting). Adjust the air pressure to insure proper setting of nails or staples. Exotic species and denser species of solid hardwood may require specific and carefully controlled nailing pressure in order to insure that the flooring is securely fastened to the subfloor. If tongue damage occurs, lower the air pressure.

Important: If you need to remove a side nailed staple, do not pull straight up from the tongue. This will damage the surface of the board. Instead, pull out the nail or staple from the tongue at the front of the board with all pressure from the hammer head directed into the subfloor.

NAIL DOWN INSTALLATION GUIDELINES:

3/4" SOLID HARDWOOD REQUIRED TOOLS AND ACCESSORIES:

- Power Nailer / air compressor
- Tape Measure
- Door jamb saw / manual or power
- Circular Saw / Jig saw
- Miter or Table Saw
- Pry Bar
- 15 lb. Asphalt Saturated Felt Paper
- Broom / shop vac
- Chalk Line and Chalk
- Hammer
- Safety Equipment (Goggles & Mask)
- Utility Knife
- Nail Punch / wood chisels
- Soft Rubber Mallet

APPROVED FASTENERS FOR 3/4" SOLID HARDWOOD INSTALLATION:

- Power Nailer #445 Pneumatic, #45 manual 2" cleat nail
- Primatch Pneumatic Floor Nailer Model P210 with 2" Power Cleat
- Primatech Manual Nailer Model H300 or H330 with 2" Power Cleat
- Stanley-Bostich Pneumatic Floor Nailer MIIIFN with 2" Power Cleat
- Stanley-Bostich Pneumatic Floor Stapler MIIIFS with 2" Staple with 1/2" crown
- Porta-Nailer Manual Floor Nailer Model 401 with 2" Power Cleat
- Porta-Nailer Manual Face Nailer Model 501 with 2" Power Cleat

ADDITIONAL TOOLS & ACCESSORIES NEEDED FOR 5/16" SOLID HARDWOOD STAPLE DOWN INSTALLATIONS:

- Blue Hardwood Installation Tape
- 5/16" "Blind" stapling machine

APPROVED FASTENERS FOR 5/16" SOLID HARDWOOD INSTALLATION:

- Stanley-Bostich SX-150-BHF-2 (Or other machines designed or adapted specifically for 5/16" solid flooring)
- 1" (minimum) glue-coated staples

INSTALLATION INSTRUCTIONS

Step 1: ESTABLISH A STARTING POINT:

- Before beginning the actual installation, provide proper layout of flooring by distributing short and long lengths equally over the areas where the flooring is to be installed.
- **Remember:** Flooring is to be installed at right angles to the floor joists and if possible, in the longest dimension of the room.
- Work out of at least six cartons at a time to insure proper color and shade mixture.
- Align the first row of planks to be sure you have a good straight line from one side of the room to the other. Snap a chalk line at the desired distance from the wall to help align the planks. The end joints of plank or strip flooring should be staggered to achieve the best appearance in the finished floor. (Minimum 6")
- **Important:** Always allow at least the thickness of the hardwood being installed as an expansion space at all walls and vertical obstructions. Expansion spaces will be concealed using baseboard, and quarter round trim.

Step 2: INSTALLING THE FLOORING

- Align the first piece on the chalk line. The groove side and end will be facing the starting wall. Pre drill holes and drive 7D or 8D finish nails or screw type flooring nails into the face of the board every 12" approximately 1/3" - 3/4" from the edge closest to the starting wall and within 2" - 3" from the ends and in the darker grain of the wood.
- Edge nail the plank by driving the same type nails at a 50° angle through the tongue of the first piece, spacing the nails every 8" - 10" and within 2" - 3" from the ends. This process should be repeated for each piece in the entire first row. Upon completion of the first row, go back and sink the face nails with a nail punch. If it appears that the holes will not be covered by the wall base or quarter round trim, fill the holes with matching wood filler, which blends with your pre-stained floor.
- Typically, the first few rows must be edge nailed by hand, rather than with a nailing machine due to the vertical wall obstruction. When clearance allows, use an approved nailing machine, which drives 2" fasteners with an appropriate mallet. Used to simplify and speed up the nailing process.
- Install each succeeding row of planks by edge nailing the tongue side every 6" - 8" to within 2" - 3" from board ends. Be attentive to staggering the ends of the boards at least 6" in adjacent rows to avoid clustering end joints. It is best to build a rack 4-6 planks wide as you install wood through the length of the room. Upon reaching the last row to be installed, the planks should be ripped to allow the required expansion space. The last rows must be fastened by nailing approximately 1/2" - 3/4" from the back edge of the board every 12". The same process of counter sinking the face nails and applying color matched wood filler, should be repeated (as above on starting wall).
- Make sure when the installation is complete that the expansion space is covered with the appropriate molding such as, base board and 3/4 rounds.

5/16" Solid Hardwood Staple-down installation tips:

- Use appropriate 5/16" blind staple machine with 1" minimum glue coated staples. (We recommend the Stanley-Bostitch SX-150-BHF-2 or equivalent) Adjust pressure accordingly to achieve flush-sink stapling.
- Blind staple along the length of strips or planks and near the ends. Staple must be at least 2" from each end and 4" to 6" apart with a minimum of 3 staples per strip or plank. Proper staple schedule will enhance floor performance, and is required for warranty protection.
- Determine starting wall and snap a chalk line parallel to it.
- Install the first row using longer strips, groove side toward the starting wall. Use top nails or a sacrificial board on the opposite side of the chalk line to hold the first row "aligned and firmly in place".
- End joints should be staggered a minimum of 6 inches to maintain a random pattern.
- The final 1-2 rows may need to be face nailed if there is not enough space to utilize the staple machine.
- Allow 5/16" expansion space around the perimeter of the installation area. Take care to protect finished areas while completing install.
- Wood flooring performs best when there is no horizontal or vertical movement of the sub-floor. Ensure that the wood sub-floor is properly secured, and well nailed or screwed down every 6" along each joist to avoid squeaking or popping before the floor is installed. Make sure the sub-floor is given ample room to expand.
- Install wood flooring perpendicular to floor joists whenever possible.

- When installing over existing wood flooring, it is important not to install over wood flooring that has been glued down. In addition, do not install over nailed floors that exceed 3 1/4" in width. It is important to install the new wood flooring at right angles to the existing wood flooring. If this is not possible, it may be necessary to install 1/4" of plywood over the existing flooring to stabilize the sub-floor.
- Whenever installing this wood flooring, applicable standards and recommendations of the construction and materials industries must be met or exceeded.

GLUE-DOWN INSTALLATION GUIDE FOR 5/16" SOLID HARDWOOD ONLY:

Note: Do not install 5/16" Solid Hardwood products over Radiant Heated Subfloors.

Tools and Accessories Needed:

- Soft Rubber Mallet
- Hand saw
- Pencil
- Moisture meter
- 3-M Blue Hardwood Tape
- Table saw or jig saw
- Hammer
- Urethane Adhesive
- Broom
- Chalk line & chalk
- Tape Measure

A moisture barrier must be used on subfloors to prevent damage to the flooring. Over concrete, use only concrete moisture sealer systems that are specifically designed for moisture suppression and adhesive bonding properties. For wood or wood based subfloors, use 15 pound asphalted felt paper. The sub-floor must be tested for moisture using the appropriate test method(s). (Please review NOFMA or NWFA guidelines for subfloors)

General Glue-down Installation Tips:

- In order to achieve the most appealing overall appearance of the floor, you must stagger the ends of the boards at least 6", from one row to the next, at all times.
- Flooring should be installed from several cartons simultaneously to ensure consistent color and grade mixing.
- Installation parallel to the longest wall is recommended for the best overall appearance.
- For larger installations, or in areas of high humidity, it is recommended that you allow ample room for internal or field expansion. In this situation, use 2-millimeter spacers every 3-4 ft. to allow sufficient room for expansion.
- Leave an expansion zone around the entire perimeter of the installation equal to the thickness of the flooring product to be installed.

Concrete Slabs:

- Use a Moisture-Cured Urethane Adhesive approved for this application. Carefully follow the instructions provided by the adhesive manufacturer, and make sure the adhesive system chosen is compatible with any moisture protection system used when installing over concrete subfloors.
- In order to prepare the concrete surface for optimum performance use mechanical methods such as sanding or scouring with open coat paper or a titanium disk.
- All concrete slabs should have a minimum of 6-mil poly film moisture barrier between the ground and concrete.
- Determine the starting wall, and measure an even number of planks out plus the required expansion and the width of the tongue of the flooring strip or plank, and used those measurements to snap a reference chalk line.
- Using the recommended trowel evenly spread the adhesive per the manufacturer's instructions. Special attention should be given to spread rate and cure times. Do not spread adhesive on an area larger than what can be covered in the open working time as specified by the adhesive manufacturer.
- Install the first row using the longer strips, groove side toward the starting wall. Use top nails or a sacrificial board on the opposite side of the chalk line to firmly hold the first row in place. The first row must be "completely and firmly" aligned and seated before proceeding, as all additional rows will be pushed against it.
- Allow expansion space equal to the thickness of the flooring product around the entire perimeter of the installation area, including undercut doorjambs or cabinet kick bases etc.
- Be careful to protect finished installed areas while completing the installation.