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WATERPROOF LOCKING HARDWOOD WITH ANGLE/ANGLE TECHNOLOGY INSTALLATION INSTRUCTIONS FOR FLOATING AND GLUE DOWN APPLICATIONS

RECOMMENDED ADHESIVES: See chart below

RECOMMENDED ADHESIVE REMOVER: Low Odor mineral spirits

RECOMMENDED CLEANER: Bruce® Hardwood & Laminate Floor Cleaner

RECOMMENDED UNDERLAYMENT: See chart below

RECOMMENDED WOOD GLUE (modifying the lock and joint gluing): Bruce® EverSeal™ Adhesive

THANK YOU FOR CHOOSING AHF PRODUCTS FLOORING. When properly installed and cared for, your new flooring will be easy to maintain and will keep its great look for years.

These directions are based on industry standards and best practices. Failure to follow these installation instructions may result in damage to the flooring and void the floor's warranty.

- For complete warranty information call 1-866-243-2726 or go to www.ahfproducts.com.
- For technical or installation questions, or to request a Safety Data Sheet, please call 1-866-243-2726 or visit www.hardwoodexpert.com our technical website.
- For general questions or comments, please visit us at www.ahfproducts.com or call 1-866-243-2726.

Product	Recommended Underlayment	Recommended Adhesive
Bruce® Hydropel™	Premium Underlayment	Bruce® Summit Select™ All In One Adhesive, Bruce Equalizer™ Pro and Bruce ProConnect™ Plus
Robbins® HydroGuard™	Attached Pad, No additional underlayment needed	Pressure Sensitive Adhesive
Hartco® HydroBlok™	Attached Pad, No additional underlayment needed	Pressure Sensitive Adhesive

GENERAL INFORMATION

Owner/Installer Responsibility

NOTE: Locking hardwood flooring is installed using a floating floor method. A 1/2" expansion zone (1/4" expansion zone required for glue down installations) must be maintained at all vertical obstructions including doorways and transition strips. The flooring cannot be fit tight against any vertical surface such as stairways, walls or pipes. Do not attach or pinch the flooring to the subfloor at any point in the installation when using a floating installation, including gluing, nailing or by any other methods. Do not restrict horizontal motion of the floor by wedging planks under other surfaces, such as door jambs, base molding, or existing transition strips. Base cabinets should not be installed on top of the planks.

Beautiful hardwood floors are a product of nature and therefore, not perfect. Our hardwood floors are manufactured in accordance with accepted industry standards. For optimum performing hardwood flooring, carefully read and follow these installation instructions.

- These hardwood floors were manufactured in accordance with accepted industry standards, which permit grading deficiencies not to exceed 5%. These grading deficiencies may be of a manufacturing or natural type. When flooring is ordered, 5% must be added to the actual square footage needed for cutting and grading allowance (10% for diagonal installations).
- The owner/installer has final inspection responsibility as to grade, manufacture and factory finish. Inspection of all flooring should be done prior to installation. The flooring should also be carefully examined for color, finish, and quality before installing it.
- The installer must use reasonable selectivity and not use or cut off pieces with deficiencies, whatever the cause. Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use that piece. If material is not acceptable, do not install it and contact the seller immediately.
- Prior to installation of any hardwood flooring product, the owner/installer must determine that the job-site environment and the sub-surfaces involved meet or exceed all applicable standards. Recommendations of the construction and materials industries, as well as local codes, should be followed. These instructions recommend that the construction and subfloor be clean, dry, stiff, structurally sound and flat. The manufacturer declines any responsibility for job failure resulting from, or associated with, subfloor and substrates or job-site environmental deficiencies.
- Use of stain, filler or putty stick to touch-up and appropriate products for correcting subfloor voids is accepted as part of normal installation procedures.

ATTENTION INSTALLERS

CAUTION: WOOD DUST

SAWING, SANDING AND MACHINING WOOD PRODUCTS CAN PRODUCE WOOD DUST. AIRBORNE WOOD DUST CAN CAUSE RESPIRATORY, EYE AND SKIN IRRITATION. THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS CLASSIFIED WOOD DUST AS A NASAL CARCINOGEN IN HUMANS.

Precautionary Measures: If power tools are used, they should be equipped with a dust collector. If high dust levels are encountered, use an appropriate NIOSH-designated dust mask. Avoid dust contact with eye and skin.

First Aid Measures in Case of Irritation: In case of irritation, flush eyes or skin with water for at least 15 minutes.

If you have any technical or installation questions, or to request a Safety Data Sheet, please call 1 866 243 2726 or visit www.hardwoodexpert.com our technical website.

IMPORTANT HEALTH NOTICE FOR MINNESOTA RESIDENTS ONLY:

THESE BUILDING MATERIALS EMIT FORMALDEHYDE. EYE, NOSE, AND THROAT IRRITATION, HEADACHE, NAUSEA AND A VARIETY OF ASTHMA-LIKE SYMPTOMS, INCLUDING SHORTNESS OF BREATH, HAVE BEEN REPORTED AS A RESULT OF FORMALDEHYDE EXPOSURE. ELDERLY PERSONS AND YOUNG CHILDREN, AS WELL AS ANYONE WITH A HISTORY OF ASTHMA, ALLERGIES, OR LUNG PROBLEMS, MAY BE AT GREATER RISK. RESEARCH IS CONTINUING ON THE POSSIBLE LONG-TERM EFFECTS OF EXPOSURE TO FORMALDEHYDE.

REDUCED VENTILATION MAY ALLOW FORMALDEHYDE AND OTHER CONTAMINANTS TO ACCUMULATE IN THE INDOOR AIR. HIGH INDOOR TEMPERATURES AND HUMIDITY RAISE FORMALDEHYDE LEVELS. WHEN A HOME IS LOCATED IN AREAS SUBJECT TO EXTREME SUMMER TEMPERATURES, AN AIR-CONDITIONING SYSTEM CAN BE USED TO CONTROL INDOOR TEMPERATURE LEVELS. OTHER MEANS OF CONTROLLED MECHANICAL VENTILATION CAN BE USED TO REDUCE LEVELS OF FORMALDEHYDE AND OTHER INDOOR AIR CONTAMINANTS.

IF YOU HAVE ANY QUESTIONS REGARDING THE HEALTH EFFECTS OF FORMALDEHYDE, CONSULT YOUR DOCTOR OR LOCAL HEALTH DEPARTMENT.

WARNING: EXISTING IN-PLACE RESILIENT FLOOR COVERING AND ASPHALTIC ADHESIVES. DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEADBLAST, OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVE, OR OTHER ADHESIVE.

These existing in-place products may contain asbestos fibers and/or crystalline silica.

Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard.

Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm.

Unless positively certain that the existing in-place product is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content and may govern removal and disposal of material.

See current edition of the Resilient Floor Covering Institute (RFCI) publication Recommended Work Practices for Removal of Resilient Floor Coverings for instructions on removing all resilient floor covering structures or AHF Products Inc. 866-243-2726.

AHF floor coverings and adhesives do NOT contain asbestos.

PREPARATION

STORAGE AND HANDLING

- Handle and unload with care. Store in a dry place being sure to provide at least a four-inch air space under cartons which are stored upon "on-grade" concrete floors. Flooring should not be delivered until the building has been enclosed with windows doors are in place, and cement work, plastering and all other "wet" work is completed and dry.
- Although it is not necessary to acclimate engineered flooring it is best to store it in the environment in which it is expected to perform prior to installation. Check adhesive label for adhesive storage limitations.

JOB-SITE CONDITIONS

- The building should be enclosed with all outside doors and windows in place. All concrete, masonry, framing members, drywall, paint, and other "wet" work should be thoroughly dry. The wall coverings should be in place and the painting completed, except for the final coat on the base molding. When possible, delay installation of base molding until flooring installation is complete. Basements and crawl spaces must be dry and well ventilated with proper moisture barrier in crawl space.
- Exterior grading should be complete with surface drainage, offering a minimum drop of 3" in 10' (7.6 cm in 3.05 m) to direct flow of water away from the structure. All gutters and downspouts should be in place.
- Engineered flooring may be installed below-, on- or above-grade level. Do not install in full bathrooms.
- Crawl spaces must be a minimum of 18" (46 cm) from the ground to the underside of the joists. A ground cover of 6-20 mil black polyethylene film is essential as a vapor barrier with joints lapped 6" (15 cm) and sealed with moisture resistant tape. The crawl space should have perimeter venting equal to a minimum of 1.5% of the crawl space square footage. These vents should be properly located to foster cross ventilation (Figure 1).
- Where necessary, local regulations prevail.
- The installation site should have a consistent room temperature of 60-80°F (16-27°C) and humidity of 30-50% for 14 days prior to and during installation and until occupied.

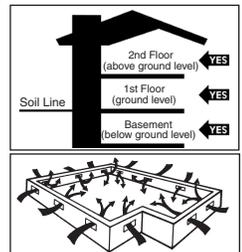


Figure 1

TOOLS & ACCESSORIES NEEDED

- Broom • Pencil • Safety glasses • Matching filler • Moisture meter (wood, concrete or both)
- Transition and wall moldings as needed • Hand saw, table saw, circular saw or band saw
- Premium Underlayment (Only when installing Bruce Hydropel) • Tape measure • Carpenter square
- Hammer or rubber mallet • Vinyl/plastic tapping block • Pull-bar • Utility knife
- NIOSH – designated dust mask • Recommended wood glue • 3M Scotch-Blue™ 2080 Tape

(Add for Glue-Down Installations)

- Recommended adhesive and adhesive remover
- 3/16" x 1/4" x 5/16" (6 mm x 13 mm x 8 mm) V-Notch trowel (Figure 2)
- 1/2" x 15/32" V-notch or 1/4" x 1/4" for Moisture barrier and sound control or other adhesive manufacturer's trowel

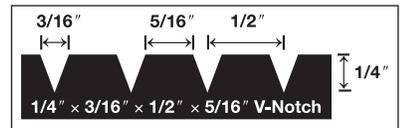


Figure 2

SUBFLOOR CONDITIONS

Flooring floors may be installed over any subfloor that is structurally sound, flat, clean, and dry on all grade levels. All substrates must meet or exceed all applicable building codes and be:

- CLEAN – Subfloor must be free of wax, paint, oil, sealers, adhesives and other debris.
 - FLAT – Within 3/16" in 10' (5 mm in 3 m) and/or 1/8" in 6' (3 mm in 2 m). Sand high areas or joints. Fill low areas with a latex additive cementitious leveling compound of 3,000-PSI minimum compressive strength patch and underlayment. Follow the instructions of the leveling compound manufacturer. Leveling compounds must be tested for moisture to ensure they are within the specified requirements for proper installation.
 - DRY – Check and document moisture content of the subfloor using the appropriate moisture test. Moisture content of wood subfloors must not exceed 12% as indicated by a wood moisture meter, and be within 3% moisture content of the product being installed.
 - STRUCTURALLY SOUND – Nail or screw any loose areas that squeak. Wood panels should exhibit an adequate nailing pattern. A typical pattern is 6" (15 cm) along bearing edges and 12" (30 cm) along intermediate supports. Flatten edge swell as necessary. Replace any water-damaged, swollen or delaminated subflooring or underlayments.
- NOTE:** Subfloors with excessive vertical movement should be avoided. Optimum performance of hardwood floor covering products occurs when there is little horizontal or vertical movement of the subfloor. If the subfloor has excessive vertical movement (deflection) before installation of the flooring, it is likely it will do so after installation of the flooring is complete.

Concrete

(All installation methods)

The flooring can be glued directly to concrete with a minimum compressive strength of 3000 PSI. Do not install over a concrete sealer or painted concrete. If present, remove by grinding or sanding. Do not install over slick, heavily troweled or burnished concrete. Roughen the surface as necessary by sanding or grinding. Use an appropriate NIOSH-designated dust mask. Floating floors can be installed over any structurally sound concrete.

Concrete Moisture Tests

All concrete subfloors should be tested, and results documented, for moisture content. Visual checks may not be reliable. Test several areas, especially near exterior walls and walls containing plumbing. Acceptable test methods for subfloor moisture content include:

- **Tramex Concrete Moisture Encounter Meter** (Figure 3): Moisture readings should not exceed 4.5 on the upper scale. (Figure 3 shows an unacceptable reading of over 4.5) Concrete Moisture Meters give qualitative reading results-not quantitative ones. These results are a quick way to determine if further testing is required.

NOTE: The following tests are required in residential/commercial applications. Either or both tests are acceptable.

- **Calcium Chloride Test (ASTM F 1869):** The maximum moisture transfer must not exceed 3 lbs./1000 ft.² in 24 hrs. with this test.

- **RH Levels in Concrete Using In-situ Probes (ASTM F 2170)** should not exceed 75%.

"DRY" CONCRETE, AS DEFINED BY THESE TESTS CAN BE WET AT OTHER TIMES OF THE YEAR. THESE TESTS DO NOT GUARANTEE A DRY SLAB.

Moisture Retardant Systems

If excessive moisture is present or anticipated, use Bruce® Summit Select adhesive or Bruce® ProConnect Plus adhesive or inexpensive sheet vinyl must be used to reduce vapor intrusion.

- **Bruce® Summit Select™ All In One adhesive:** Apply the adhesive using the trowel that is attached on every pail.

Flooring can be installed immediately after applying the adhesive.

- **Bruce® Summit Select™ adhesive:** Apply the adhesive using the Summit trowel that is listed on every pail. Flooring can be installed immediately after applying the adhesive. (Only when installing Bruce Hydrolap)

- **Sheet vinyl:** An inexpensive sheet vinyl or "slip-sheet" (felt-backed with vinyl wear layer) may be installed. Use a premium grade, alkali resistant adhesive and a full spread application system to properly bond the vinyl to the subfloor. Follow the sheet vinyl manufacturer's instructions for installation procedures. A bond test may be required as an adhesion test. Install several small areas (3' x 3') (1 m x 1 m) and allow the vinyl to set for 72 hours. Remove the vinyl. If the backing remains attached to the concrete, the subfloor should be acceptable for sheet vinyl installation. Install the sheet vinyl and allow the adhesive to cure for 24 hours prior to beginning installation. Degloss as necessary to create an adequate adhesive bond. Always check for adequate adhesive bond.

Acoustic Concrete

(All installation methods)

Acoustic concrete normally contains large quantities of gypsum that may inhibit the adhesive's capability to properly bond. Acoustic concrete must be primed with a primer such as Taylor 2025 or the concrete manufacturer's recommended primer/surface hardener. Test the concrete by scraping the surface with a nail or other sharp object. If the concrete powders or crumbles, it is not sound and suitable for direct application of hardwood flooring and may require the use of a floating sub-floor system. Always check for adequate adhesive bond. The concrete must have a minimum compressive strength of 2000 PSI.

Ceramic, Terrazzo, Slate & Marble

(All installation methods)

All grout joints and broken corners that exceed 3/16" (5 mm) must be filled with a cementitious leveling compound patch and underlayment. The surface should be cleaned and abraded to create a good bonding surface for the adhesive. Loose tiles must be re-adhered to the subfloor or filled as above. Remove all sealers and surface treatments. Always check for adequate adhesive bond.

Acoustic Cork Underlayment

(All installation methods)

The flooring can be glued or floated directly over full-spread, permanently bonded acoustic cork. The cork should have a density of no less than 11.4 lb./cubic foot. The cork, in general, should be pure cork combined with a polyurethane or resin binder. Install cork in accordance with cork manufacturer's recommendations. Always check for adequate adhesive bond. When floating floors over cork DO NOT use foam underlayment.

Wood Subfloors and Underlayment

(All Installation Methods)

General: The wood subflooring materials must not exceed 13% moisture content. Using a reliable wood moisture meter, measure moisture content of both the subfloor and the hardwood flooring to determine proper moisture content. Moisture content of wood subfloors must not exceed 12% as indicated by a wood moisture meter, and be within 3% moisture content of the product being installed. When installing parallel to the floor joists it may be necessary to stiffen the subfloor system by installing an additional minimum of 3/8" (9.5 mm) approved underlayment. Applicable standards and recommendations of the construction and materials industries must be met or exceeded.

NOTE: As flooring manufacturers, we are unable to evaluate each engineered system. Spacing and spans, as well as their engineering methods, are the responsibility of the builder, engineer, architect or consumer who is better able to evaluate the expected result based on site-related conditions and performance. The general information provided below describes common, non-engineered joist/subfloor systems. Engineered flooring systems may allow for wider joist spacing and thinner subflooring materials.

Wood Structural Panel Subfloors and Underlayment

(All Installation Methods)

Structural panels/underlayment must be installed sealed side down. When used as a subfloor, allow 1/8" (3 mm) expansion space between each panel. If spacing is inadequate, cut in with a circular saw. Do not cut in expansion space on tongue and groove panels.

- **Plywood:** Must be minimum CDX grade (exposure 1) and meet US Voluntary Product Standard PS1 performance standard or Canadian performance standard CAN/CSA 0325-0-92. The preferred thickness is 3/4" (19 mm) as a subfloor [minimum 5/8" (16 mm)] or 3/8" (9.5 mm) as underlayment.
- **Oriented Strand Board (OSB):** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92 construction sheathing. Check underside of panel for codes. When used as a subfloor, the panels must be tongue and groove and installed sealed side down. Minimum thickness to be 23/32" (18 mm) thick when used as a subfloor or 3/8" (9.5 mm) as underlayment.
- **Waterboard and Chipboard:** Conforming to US Voluntary Product Standard PS2 or Canadian performance standard CAN/CSA 0325-0-92. Must be 3/4" (19 mm) thick when used as a subfloor and 3/8" (9.5 mm) thick when used as an underlayment.
- **Particleboard:** Must be a minimum 40-lb. density, stamped underlayment grade and 3/4" (19 mm) thick.

Solid Wood Subfloors

(All Installation Methods)

- Minimum 3/4" (19 mm) thick with a maximum width of 6" (15 cm) installed at a 45° angle to the floor joists.
- Group 1 dense softwood (Pine, Larch, Douglas Fir, etc.) No. 2 common, kiln dried with all board ends bearing on joists.
- For glue down applications add 3/8" (9.5 mm) approved underlayment.

Existing Wood Flooring

(All Installation Methods)

- Existing engineered flooring must be well bonded/fastened. When gluing over existing wood flooring of any thickness, the finishing materials must be abraded or removed to foster an adequate adhesive bond. When flooring is to be mechanically fastened, the existing engineered wood flooring must be a minimum of 3/8" (9.5 mm) thick installed over approved wood/wood composite underlayment that has been properly fastened. When installing over

engineered flooring that is glued to concrete, the minimum thickness of that flooring must be 1/2" (13 mm) to allow for the length of the fastener.

- Existing solid wood flooring that exceeds 6" (15 mm) in width must be covered with 3/8" (9.5 mm) approved underlayment and fastened as required. Do not install over solid flooring attached directly to the concrete.

INSTALLING THE FLOOR

Before You Start

- Before installing the planks, central heat or air conditioning should be operating for 14 days.
- Install only at room temperature above 60°F (16°C) and 30-50% humidity conditions.
- In rooms with under-floor (radiant) heating, the surface temperature of the subfloor may not, under any circumstances, exceed 85°F (29°C). Increasing heat should be done in 5-degree increments. Ascertain that the subfloor is properly engineered or controlled for the flooring being installed. Subfloors designed for materials with higher resistance to heat transfer, such as carpet, WILL damage the flooring. Installations that include multiple floor covering products on a single heating circuit must be adjusted for the flooring product with the highest heat transfer or lowest temperature requirement.
- When possible, preselect and set aside boards that blend best with all horizontally mounted moldings (reducer/stair nose etc.) This will assure a uniform final appearance. Install these boards adjoining the moldings.
- Floor should be installed from several cartons at the same time to ensure good color and shade mixture.
- Be attentive to staggering the ends of the boards at least 4"-6" (10-15 cm) when possible, in adjacent rows. This will help ensure a more favorable overall appearance of the floor.

STEP 1: Doorway and Wall Preparation

(Floating Installations)

- Undercut door casings and jambs. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. When undercutting door casings the installer should confirm there is the recommended expansion space. The floor must have 1/16" clearance under the door casing to be able to float freely without vertical restriction.

STEP 2: Plan Your Layout Using the Following Steps

(Floating Installations)

- Decide the direction of the floor installation in the room. Planks installed parallel to windows accent the floor the best. Floors should be installed perpendicular to the floor joists. If the floor is being installed parallel to the joists based on installation needs, it may be necessary to add an additional underlayment, at least 3/8" thickness to ensure the subfloor is adequate for this layout. Stiffen subfloors as necessary to prevent vertical movement.

NOTE: If your room exceeds a maximum room width of 30' (9 m) or a maximum room length of 30' (9 m) additional expansion space is required. T- Moldings may be used at doorways or intersections to increase the expansion space.

STEP 3: Laying the Underlayment

(Floating Installations) (Only when installing Bruce Hydrolap)

- Install the underlayment in the same direction that the hardwood flooring is to be installed.
- Extend the underlayment a few inches up the wall.
- Trim excess prior to installing trim or moldings.
- The floating floor underlayment may already have double-sided tape for ease of taping the pre-cut overlapping seams. If a non-adhesive underlayment is used, tape all seams with the recommended tape.

STEP 4: Installing First Row

(Floating Installations)

- Begin on the left side of the room and work right.
- Lay the first full piece with the small, tongue side facing the wall (Fig. 4).
- Install second and subsequent full pieces in the first row by aligning short ends of boards and locking into place (Fig. 5).
- Use spacers along all sides that butt up against walls to maintain a 1/2" (12.7 mm) expansion zone (Figs. 5 & 6).
- Continue laying boards in the first row until you need to cut the last piece.
- Measure the distance between the wall and the face surface of the last board. Subtract 1/2" (6.35 mm) and cut the board. (See cutting instructions above.)
- If this distance is less than 8" (20.32 cm) go back to the first full plank and cut approximately 8" (20.32 cm) from the end closest to the starting wall. This will leave a longer piece at the end of the first row.

Installing Remaining Rows

- Begin the second row of planks with the piece cut from the last piece in the first row. If the piece is shorter than 8" (20.32 cm), cut a new plank in half and use it to begin the second row. Whenever practical, use the piece cut from the preceding row to start the next row. End joints of all boards should be staggered 8" (20.32 cm) or more.
- Install the long end of the first board at an angle to the board in the previous row. Keep this board at its natural angle slightly raised off the subfloor (Fig. 7). Use a scrap piece of hardwood to support the row if needed.
- Continue installing full boards in the second row by angling the short end of the next board in the row to lock into the previous board (Fig. 8). Position the board so that the long side of the board is close to boards in the previous row and overlapping the groove of the boards in the previous row.
- Angle up and push forward until the boards lock together (Fig. 9).
- Continue installing full boards in the second and subsequent rows until you reach the wall on your right.
- Mark the last piece, cut and install. After all boards in the row are installed, press or walk all boards flat to the subfloor to begin the next row (Fig. 10).
- Use a pull bar when necessary to ensure joints are tight (Fig. 11).

Installing the Last Row

- The last row in the installation may need to be cut lengthwise.
- Place the row of planks to be fit on top of the last row of installed planks. Use a divider or a piece of the plank as a scribe to trace the contour of the wall (Fig. 12).



Figure 3

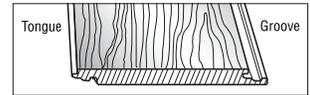


Figure 4

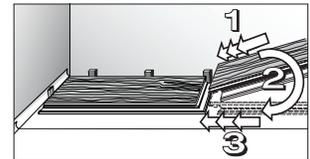


Figure 5

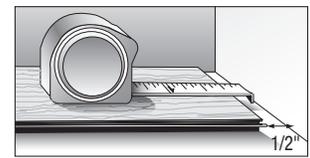


Figure 6

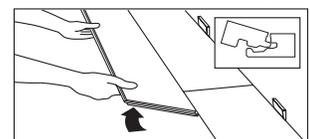


Figure 7

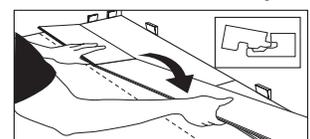


Figure 8

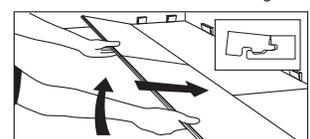


Figure 9

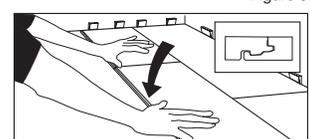


Figure 10

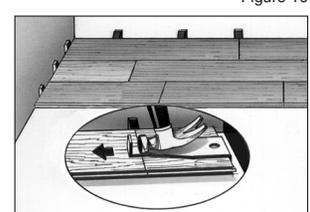


Figure 11

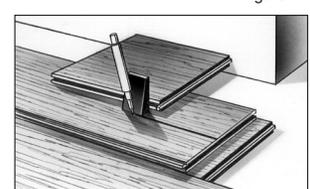


Figure 12

- Be sure to place a spacer between the marking pen and "scribe" piece of board. This adds the 1/4" (6.35 cm).

General Information for Glue-Down Installations

NOTE: DO NOT INSTALL FLOORING USING RUBBER MALLETS. STRIKING THE SURFACE WITH A RUBBER Mallet MAY "BURN" THE FINISH CAUSING IRREPAIRABLE DAMAGE.

- Maximum adhesive working times: 50-60 minutes-When not in use, keep the adhesive container tightly closed to prevent thickening. Thickening will cause difficulty in spreading the adhesive. Bruce® Summit Select – 50 minutes
- Open times and curing times of ALL adhesives vary dependent upon subfloor porosity, air movement, humidity and room temperature. Urethane adhesive has a shortened working time in high humidity environments. In areas of low humidity, open time will be longer with urethane adhesives and shorter with some adhesives. Adjust the amount of adhesive spread on the subfloor accordingly. The adhesive should not be applied if subfloor or room temperature is below 60°F (16°C). WORKING TIME WILL VARY DEPENDING ON JOB SITE CONDITIONS.

- Hold trowel at a minimum 45° angle (Figure 13) firmly against the subfloor to obtain a 50-60 ft.² (4-5.5 m²) per gallon spread rate (20-30 ft.² per gallon for Bruce® Summit Select spread with listed trowels) The trowel will leave ridges of adhesive and very little adhesive between the ridges. This method will allow you to still see the chalk lines between the ridges and provide the recommended spread rate.
- For additional application instructions, follow the recommendations on the adhesive container.
- Proper ventilation within the room to mitigate fumes. An electric fan is helpful. Position the fan so it does not blow directly on the adhesive.

STEP 3: Spread the Adhesive (Glue-Down Installations)

- Spread sufficient amounts of the recommended adhesive with the recommended trowel (Figure 2) in an area that can be covered in 60 minutes (see adhesive information).
- If necessary, nail a sacrificial row with 1" (2.5 cm) nails on the dry side of your chalk line to help hold the first row in place.

NOTE: Avoid installing on the surface of the flooring. If necessary, distribute weight using a kneeler board.

STEP 4: Installing the Floor (Glue-Down Installations)

(Figure 14-19)

- Use the longest, straightest boards available for the first two rows. For random and alternate width products, use the widest plank for the first row. The first row of planks should be installed with the edge of the groove lined up on the chalk line. The tongue should be facing the starting wall. The first row must be aligned and seated in the adhesive, as all additional rows will be pushed back to this original row. Remove tongue to allow for expansion space, if necessary, on the row adjoining the wall.
- When installing pieces, engage the end-joint first, as close to the side (long) tongue and groove as possible, then slide together tightly to engage the side (long) joint tongue and groove. To avoid adhesive bleed-through and memory pull-back, avoid sliding pieces through the adhesive as much as possible when placing them in position.
- During the installation occasionally remove a piece of flooring from the subfloor and inspect the back for proper adhesive transfer. Adequate adhesive transfer is necessary to ensure sufficient holding strength.
- If the adhesive skins over and fails to transfer, remove and spread new adhesive to achieve proper bonding.
- NOTE:** Clean adhesive from the surface of the floor frequently, using the recommended adhesive cleaner. Urethane adhesives become extremely difficult to remove when cured. Do not use 3M Scotch-Blue™ 2080 Tape before adhesive is removed from the surface. Use clean towels, changed frequently, to prevent haze and adhesive residue.
- Check for a tight fit between all edges and ends of each plank. End-joints of adjacent rows should be staggered 4"-6" (10-15 cm) when possible, to ensure a more favorable overall appearance (Figure 17).
- It may be necessary to align the product with a cut-off piece of scrap as shown (Figure 19 - Keep scrap angle low to avoid edge damage).
- To eliminate minor shifting or gapping of product during installation, use 3M Scotch-Blue™ 2080 Tape to hold the planks together. After installation is complete, remove all of the 3M Scotch-Blue™ 2080 Tape from the surface of the newly installed flooring. Do not let the tape remain on the flooring longer than 24 hours. Avoid the use of masking or duct tape, which leaves an adhesive residue and may damage the finish.
- If necessary, use weights to flatten boards with bows until adhesive cures, in order to prevent hollow spots. Boards that cannot be flattened should be cut in length to reduce the bow, or not used.
- Roll and cross roll the floor with a 75-100lb. roller within one hour of the installation and again two hours to ensure proper transfer of the adhesive.
- Be sure not to spread adhesive too far ahead of your work area (Figure 18).
- Complete the installation using this same technique for the remainder of the floor.
- Avoid heavy foot traffic on the floor for at least 24 hours. Lift the furniture or fixtures back into place after 24 hours.

Installing Under a Door Jamb (All Installations)

- Installations of locking engineered floors under moldings, such as a door jamb, may require that the top lip of the groove on the end be reduced in size.
- Using a small plane or knife plane, shave off the ledge of the groove.
- After the groove edge has been trimmed, place the board into place and tighten with a pull bar to test for fit. The installer must be certain that the proper expansion space is maintained and the flooring is not pinched.
- If fit is incorrect, trim as necessary. Remove any wax from the end joint so you will get good adhesion.
- Place a bead of recommended wood glue on the bottom lip of the groove.
- Reinsert the tongue into the groove and tighten the board with a pull bar. Hold the board in place with painter's tape (3M Scotch-Blue™ 2080 Tape) until the glue is dry. Do not use masking tape or duct tape, as the finish may be damaged.

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Installing in Kitchens or Bathrooms

- Prolonged exposure (greater than 36 hours) to water could damage the hardwood flooring. Installation and maintenance recommendations should be closely followed to prevent water from contacting the core material of the flooring.
- Full bathroom installations require folding the underlayment up the wall 2" (5 cm). Cut the underlayment even with the top of flooring after installation.
- Joint integrity is integral to moisture resistance. Avoid excessive joint flexing during installation.
- All perimeter expansion zones must be completely filled with 100% silicone caulk following the manufacturer's recommendations. When applying caulk, it is helpful to first apply a strip of painter's tape (3M Scotch-Blue™ 2080 Tape) parallel to and approximately 1/32" (.79 mm) from the edge of the hardwood (Fig. 20). Then fill the expansion zone with caulk, remove the excess with a plastic scraper or putty knife and remove the tape.
- Molding may be used along a straight tub or shower base (Fig. 21). The expansion zone should be filled with 100% silicone caulk and the molding seated in the caulk while it is still wet. The joint between the molding and the tub or shower base should also be caulked.
- If molding is not an option, a normal 1/4" (6.35 mm) expansion zone may be used at the tub and then completely filled with 100% silicone caulk.
- The toilet should be removed before installing the flooring. Allow a 1/2" (6.35 mm) expansion zone between the flooring edge and the toilet flange. Completely seal the zone with 100% silicone caulk.

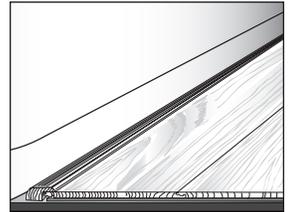


Figure 21

Completing the Installation (All Installations)

- Remove all wedges and tape if used.
- Clean floor with the recommended hardwood flooring cleaner.
- If drywall dust is present, thoroughly vacuum prior to using the recommended cleaner.
- Trim all underlayment and install, or re-install, all base and/or quarter round moldings. Nail moldings into the wall, not the floor. Inspect the floor, filling all minor gaps with the appropriate blended filler.
- If the floor is to be covered, use a breathable material such as cardboard. Do not cover with plastic.
- Leave warranty and floor care information with the owner. Advise them of the product name and code number of the flooring they purchased.
- To prevent surface damage, avoid rolling heavy furniture and appliances on the floor. Use plywood, hardboard or appliance lifts if necessary. Use protective casters/caster cups or felt pads on the legs of furniture to prevent damage to the flooring.

TRANSITION AND WALL MOLDINGS



Reducer Strip

Threshold

Stair Nosing

Quarter Round

T-Molding

- **Reducer Strip:** A teardrop shaped molding used around fireplaces, doorways, as a room divider, or as a transition between hardwood flooring and adjacent thinner floor coverings. Fasten down with adhesive, small nails or double-faced tape.
- **Threshold:** A molding undercut for use against sliding door tracks, fireplaces, carpet, ceramic tile, or existing thresholds to allow for expansion space and to provide a smooth transition in height difference. Fasten to subfloor with adhesive and/or nails through the heel. Pre-drill nail holes to prevent splitting.
- **Stair Nosing:** A molding undercut for use as a stair landings trim, elevated floor perimeters, and stair steps. Fasten down firmly with adhesive and nails or screws. Pre-drill nail holes to prevent splitting.
- **Quarter Round:** A molding used to cover expansion space next to baseboards, case goods, and stair steps. Pre-drill and nail to the vertical surface, not into the floor.
- **Combination Base and Shoe:** A molding used when a base is desired. Used to cover expansion space between the floor and the wall. Pre-drill and nail into the wall, not the floor.
- **T-Molding:** A molding used as a transition piece from one rigid flooring to another of similar height or to gain expansion spaces. Fasten at the heel in the center of the molding. Additional rigid support may need to be added to the heel of the molding dependent upon the thickness of the goods covered. Do not use this molding as a transition to carpet.

INSTALLERS – ADVISE YOUR CUSTOMER OF THE FOLLOWING

Seasons: Heating and Non-heating

Recognizing that hardwood floor dimensions will be slightly affected by varying levels of humidity within your building, care should be taken to control humidity levels within the 30-50% range. To protect your investment and to assure that your floors provide lasting satisfaction, we have provided our recommendations below.

- **Heating Season (Dry):** A humidifier is recommended to prevent excessive shrinkage in hardwood floors due to low humidity levels. Wood stoves and electric heat tend to create very dry conditions.
- **Non-Heating Season (Humid, Wet):** Proper humidity levels can be maintained by use of an air conditioner, dehumidifier, or by turning on your heating system periodically during the summer months. Avoid excessive exposure to water from tracking during periods of inclement weather. Do not obstruct in any way the expansion joint around the perimeter of your floor.

Damage caused by failing to maintain the proper humidity levels is not manufacturing related and will void the floor's warranty.

NOTE: Final inspection by the end-user should occur from a standing position.

FLOOR REPAIR

- Minor damage can be repaired with a Bruce® touch-up kit or acrylic wood filler. Major damage will require board replacement, which can be done by a professional floor installer.
- Instructions for the board replacement can be found at www.hardwoodexpert.com, our technical website.

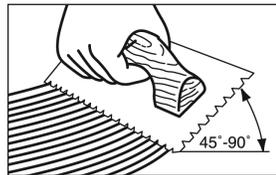


Figure 13

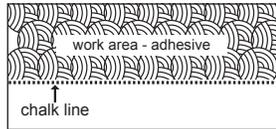


Figure 14

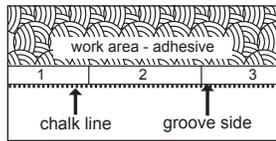


Figure 15

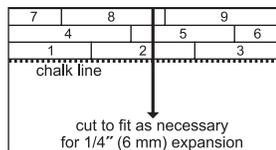


Figure 16

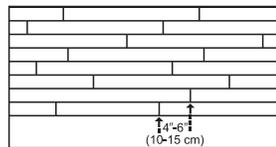


Figure 17

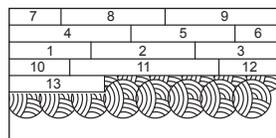


Figure 18

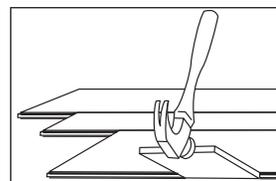


Figure 19

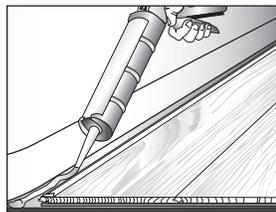


Figure 20