

5/16" Natural Reflections Solid Strip For Staple-Down & Glue-Down Installation

INSTALLER/OWNER RESPONSIBILITY

Beautiful hardwood floors are a product of nature and therefore, not perfect. Our 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 product quality. This inspection of all flooring should be done before installation. Carefully examine flooring for color, finish and quality before installing it. If material is not acceptable, do not install it and contact the seller immediately.
- Prior to installation of any hardwood-flooring product, the installer must determine that the job-site environment and the sub-surfaces involved meet or exceed all applicable standards and recommendations of the construction and materials industries. These instructions recommend that the construction and subfloor be dry, stiff and flat. The manufacturer declines any responsibility for job failure resulting from or associated with sub-surface or job-site environment deficiencies.
- Prior to installation, the installer/owner has final inspection responsibility as to grade, manufacture and factory finish. The installer must use reasonable selectivity and hold out or cut off pieces with defects, whatever the cause.
- Use of stain, filler or putty stick for defect correction during installation should be accepted as normal procedure.
- When flooring is ordered, 5% must be added to the actual square footage needed for cutting and grading allowance.
- Should an individual piece be doubtful as to grade, manufacture or factory finish, the installer should not use the piece.

TOOLS & ACCESSORIES NEEDED

- | | | | |
|----------------|------------|---------------------------------------|---|
| • Broom | • Hand saw | • Table saw, jig saw, or circular saw | • Recommended Hardwood Flooring Cleaner |
| • Tape Measure | • Hammer | • Chalk line & chalk | • Moisture meter (wood, concrete or both) |

Additional Tools & Accessories Needed for Staple-Down Installations

NOTE: It is extremely important to use the proper adapters as well as staples or cleats. Improper fasteners, machines and air pressure can cause severe damage. The manufacturer of this flooring product is not responsible for damage caused by use of improper tools or misuse.

- | | |
|--|--|
| • Pneumatic Brad-Nailer with 1" brads OR Drill with 1/16" drill bit 4-6d screw-shank nails & nail set Nail set | • 5/16" "Blind" stapling machine |
| • Duct tape | • Stanley-Bostitch S32SXBHF |
| • Bruce Vapor-Lock moisture retardant barrier | • Senco SLS20HF |
| | • Other machines designed or adapted SPECIFICALLY to 5/16" |

solid flooring

- 1" (minimum) glue coated staples

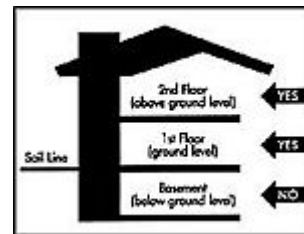
Additional Tools & Accessories Needed for Staple-Down Installations

- Bruce Equalizer Adhesive
- Bruce Adhesive Cleaner
- Bruce Trowel

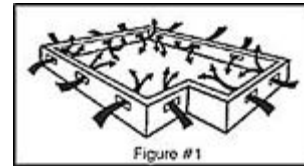
PRE-INSTALLATION PROCEDURES

Job Site Inspection

- The building should be closed in 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.



- Exterior grading should be complete with surface drainage directing water away from the building. All gutters and downspouts should be in place.
- Natural Reflections can only be installed on or above grade level. Do not install in full bathrooms.
- Basements and crawl spaces must be dry and well ventilated.



- Crawl space must be a minimum of 24" (600 mm) from the ground to underside of joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. 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 (see figure #1).
- Subfloor must be checked for moisture content using the appropriate testing method.
- Permanent air conditioning and heating systems should be in place and operational. The installation site should have a consistent room temperature of 60-75-degree F and humidity of 35-55% for 14 days prior, during and until occupied, to allow for proper acclimation.

STORAGE AND HANDLING

Natural Reflections should be stored in the environment in which they are expected to perform. Deliver the materials to an environmentally controlled site. Materials should be allowed to acclimate for as long as necessary to meet minimum installation requirements for moisture content. 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 closed in with windows and doors

in place and until cement work, plastering and all other "wet" work is completed and dry. Concrete should be at least 60 days old. Air conditioning/heating systems should be in place and in operation at least 14 days prior, during and after installation of the flooring.

INSTALLATION APPLICATIONS

NOTE: MINOR SQUEAKING OF MECHANICALLY FASTENED FLOORS IS NOT ABNORMAL DUE TO STRUCTURAL MOVEMENT CAUSED BY CHANGES IN ENVIRONMENTAL CONDITIONS. FOLLOWING THESE INSTRUCTIONS CAN MINIMIZE THESE FACTORS, BUT OFFER NO GUARANTEE THAT THE FLOOR WILL NOT SQUEAK.

General Information for Stapled Applications

Improper pressure settings and failure to use proper adapters can cause severe damage to the flooring. The correct fastening machine and air pressure setting will properly set the staple in the nail pocket (figure #2).

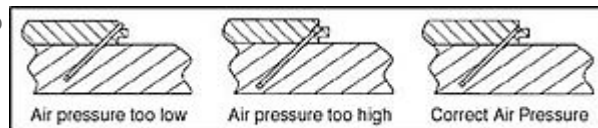


Figure #2

Low air pressures may fail to properly set the staple and damage adjoining boards. Air pressures set too high may cause damage to the tongue, preventing installation of adjoining boards and cause blisters on the face of the flooring. Make certain that the compressor has a regulator in-line with the air hose for proper adjustment. Set pressure at 70 PSI to begin with and adjust until proper staple setting occurs. USE A STAPLER DESIGNED FOR THE THICKNESS OF THE PRODUCT BEING INSTALLED such as the Stanley-Bostitch S32SXBHF or others listed above. Any water damaged, swollen or delaminated subflooring materials will not hold staples and must be repaired or replaced.

SUBFLOOR REQUIREMENTS

SUBFLOORS MUST BE:

- CLEAN - Scrape, broom clean, and smooth. Free of wax, paint, oil or debris.
- LEVEL/FLAT - Within 3/16" in 10' and/or 1/8" in 6'. Sand high areas or joints. Low spots can be flattened using shims or layers of builders felt between the wood and the subfloor during installation.
- STRUCTURALLY SOUND - Nail or screw any loose areas that squeak. Replace any water-damaged, swollen or delaminated subflooring or underlayments, as they are unable to properly hold fasteners. Avoid subfloor with excessive vertical movement unless they have been properly stiffened prior to the installation of the wood flooring.
- DRY - Check moisture content of subfloor. Moisture content of wood subfloor must not exceed 13% on a wood moisture meter, or read more than a 4% difference (3% for plank) than moisture level of product being installed.

RECOMMENDED SUBFLOOR SURFACES

STAPLE-DOWN OR GLUE-DOWN:

- PREFERRED:
3/4" (19 mm) CDX grade plywood
3/4" (23/32") OSB PS2 rated underlayment
MINIMUM: 5/8" CDX grade plywood

GLUE-DOWN ONLY:

- Concrete slabs
- Acoustic concrete

- MINIMUM: 5/8" CDX grade plywood
- Existing solid wood flooring
- Vinyl, resilient tile, cork flooring
- 3/4" chip, waferboard, particleboard
- Ceramic, terrazzo, slate and marble
- Metal
- Cork (Acoustic)

SUBFLOOR TYPES:

Note: Do Not Install Natural Reflections Over Radiant Heated Subfloors

CONCRETE SLABS

Glue-Down

Natural Reflections can be glued directly to concrete using Bruce Equalizer adhesive. Do not use a concrete sealer nor install over one. Surface preparation using mechanical methods such as sanding or scouring with open coat paper or a titanium disk is preferred. The concrete must be of high compressive strength. All concrete subfloors should be tested for moisture content. Visual checks are not reliable. Acceptable test methods for subfloor moisture content include:

NOTE: Test several areas, especially near exterior walls and walls containing plumbing.

- A 3% Phenolphthalein in Anhydrous alcohol solution. Chip the concrete at least 1/4" deep (do not apply directly to the concrete surface) and apply several drops of the solution to the chipped area. If any color change occurs, further testing is required.
- Calcium Chloride test. The maximum moisture transfer must not exceed 3 lbs./1000 square feet with this test.
- 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)



Figure #3

A "DRY" SLAB, AS DEFINED BY THESE TESTS CAN BE WET AT OTHER TIMES OF THE YEAR. THESE TESTS DO NOT GUARANTEE A DRY SLAB. ALL CONCRETE SLABS SHOULD HAVE A MINIMUM OF 6 MIL POLY FILM MOISTURE BARRIER BETWEEN THE GROUND AND THE CONCRETE.

Moisture Barrier System: If moisture is present, inexpensive sheet vinyl or "slip-sheet" (PVC) may be installed. Use a premium grade, alkaline resistant adhesive and a full spread application system to properly bond the vinyl to the subfloor. Follow the sheet vinyl manufacturer instructions for installation procedures. A patch test may be required as an adhesion test. Install several small areas (3' x 3') 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. If you have any questions regarding installation or the handling of moisture problems, please contact the distributor/retailer from whom the goods were purchased.

ACOUSTIC CONCRETE

Glue-Down Only

Acoustic concrete normally contains large quantities of gypsum that may inhibit the adhesive's capability 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.

WOOD/CONCRETE SUBFLOOR SYSTEMS

Bonded: Install a suitable moisture retardant followed by a plywood subfloor with a minimum

thickness of 3/4". Allow 1/2" expansion space around all vertical objects and 1/8" between all flooring panels. The panel must be properly attached to the subfloor using a minimum of one fastener per square foot and more if necessary. Use pneumatic or powder actuated fasteners. Do not hand nail the subfloor with concrete nails. Install a moisture retardant barrier with joints lapped 6" and begin installation of flooring using 1 1/2" fasteners.

Floating: Install a suitable moisture retardant followed by a plywood subfloor with a minimum of 3/8". Allow 1/2" expansion space around all vertical objects and 1/8" between all flooring panels. Install a second layer of 3/8" plywood at a right angle to the previous panels, offsetting the joints 2'. Staple together with staples that will not penetrate the first layer of subfloor with a crown width of 3/8" or more. Install a moisture retardant barrier with joints lapped 6" and begin installation of flooring.

WOOD SUBFLOORS & WOOD STRUCTURAL PANEL SUBFLOORS

Plywood: Must be APA CDX grade or better.

Oriented Strand Board (OSB): Must be PS2 rated installed sealed side down.

Particleboard: Must be a minimum 40-LB density, stamped underlayment grade and 3/4" thick.

Do Not install over pressed wood or fiber board.

Staple-Down or Glue-Down

Make sure existing floor or subfloor is dry and well nailed or screwed down every 6" along each joist to avoid squeaking or popping before the floor is installed. Measure moisture content of both subfloor and wood flooring to determine proper moisture content with a reliable wood moisture meter (figure #4). The wood subfloor must not exceed 13% moisture content as measured with a reliable wood moisture meter. The difference between the moisture content of the wood subfloor and the wood flooring must not exceed 4%.



Figure #4

Optimum performance of hardwood floor covering products occurs when there is no horizontal or vertical movement of the subfloor. The MINIMUM subfloor recommendations described above are for 16" O/C joist spacing. The thicker, PREFERRED subfloor recommendations described above will allow 19.2" joist spacing if the joist manufacturer's recommended span is not exceeded. Spacing in excess of 19.2" O/C may not offer optimum results. Install flooring perpendicular to the floor joists when possible. Installations should not be made parallel to the floor joists or on joist spacing that exceeds 19.2" O/C unless the subfloor has been properly stiffened. Stiffening may require the addition of a second layer of subflooring material to bring the overall thickness to at least 1-1/8".

All underlayment panels should be spaced 1/8" apart to insure adequate expansion space. This can be achieved by using a circular saw set at the depth of the underlayment and cutting around the perimeter of the panel. T&G panels normally have built in expansion; DO NOT cut around the perimeter of T&G panels. Do not install over existing glue-down wood floors. 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, it may be necessary to install an additional 1/4" layer of plywood to stabilize the flooring or install the wood floor at right angles. Applicable standards and recommendations of the construction and materials industries must be met or exceeded.

RESILIENT TILE, RESILIENT SHEET VINYL & CORK FLOORING

Staple-Down

Make sure the vinyl or tile is full spread adhesive and well bonded to the subfloor. Do not install over more than one layer, which does not exceed 1/8" in thickness over suitable subfloor. If vinyl or tiles are loose, crumbled, or in poor condition, install an underlayment directly over the sheet vinyl (linoleum) or vinyl tiles. CAUTION: Some older type tiles become brittle with age. Ascertain that the staple will penetrate these materials and that breakage does not occur. Remove if necessary.

Glue-Down

If the tiles or sheet goods are well bonded, clean the surface thoroughly with a good quality household detergent. De-gloss flooring as necessary to create a good adhesive bond using an abrasive pad. If vinyl appears to have a coating of wax or other maintenance materials, it must be removed with the appropriate floor stripper. Allow ample drying time. (Note: Do not sand any resilient products for they may contain asbestos fibers, which may be harmful.) Do not install over floors that exceed two layers. Cork floors must have all sealers and surface treatments removed before installation begins.

CORK (ACOUSTIC)

Glue-Down Only

Natural Reflections flooring can be glued directly over full-spread, permanently bonded acoustic cork. The cork should have a density of no less than 11.4 lb./cubic foot and no more than 13 lb./cubic foot. The cork, in general, should be pure cork combined with a polyurethane binder. Cork thickness is to be no more than 1/4" (6 mm). Install cork in accordance with manufacturer's recommendations.

CERAMIC, TERRAZZO, SLATE & MARBLE

Glue-Down Only

All grout joints and broken corners that exceed 3/16" must be filled with a cementitious leveling compound mixed with Latex additive. 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.

DOORWAY AND WALL PREPARATION

Undercut door casings. Remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation. All door casings should be notched out (figure #5) or undercut to avoid difficult scribe cuts.



GENERAL INSTALLATION TIPS

- 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 boards at least 6", when possible, in adjacent rows (figure #6). This will help ensure a more favorable overall appearance of the floor.
- Installation parallel to the longest wall is recommended for best visual effects, however, the floor should be installed perpendicular to the flooring joists unless subfloor has been reinforced to reduce subfloor sagging. Find appropriate subfloor from "Subfloor Type" section in this instruction manual.
- The patented Accu-Lock milling process creates built-in expansion naturally. This special tongue and groove configuration is designed to leave small expansion gaps in the floor during installation. Avoid using tapping blocks, machines or systems that eliminate this built-in expansion.
- Large spans in areas of high humidity may require the addition of internal or field expansion. This can be accomplished by using spacers, such as small washers, every 10-20 rows inserted above the tongue and removed after several adjoining rows have been stapled or glued. Installation parallel to the longest wall is recommended for best visual effects. however. the floor should be installed perpendicular to the flooring

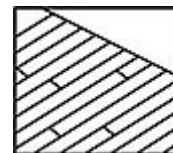
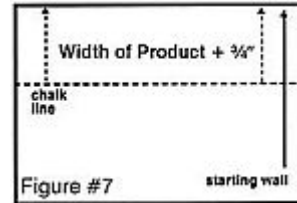


Figure #6
PREFERRED
Alignment

joists unless subfloor has been reinforced to reduce subfloor sagging. Find appropriate subfloor from "Subfloor Type" section in this instruction manual.

STEP 1: ESTABLISH A STARTING POINT: ALL INSTALLATIONS

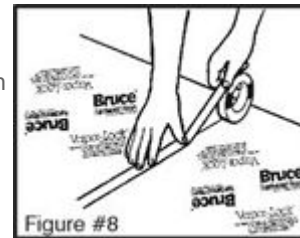
- In at least two places, measure out equal distance from the starting wall and 12" -18" from the corners and 3 1/8" from the wall. Mark these points and snap a chalk line (figure #7).



STEP 2: INSTALLING THE VAPOR-LOCK MOISTURE RETARDANT: STAPLE-DOWN INSTALLATIONS

CAUTION: This Vapor-Lock Moisture Guard may be slippery and unstable when walked on prior to the installation of the flooring. Use extreme care during installation.

- Roll out the materials in the same direction as the flooring will be installed allowing the Vapor-Lock to extend 3"-4" up the walls.
- Position the Vapor-Lock so that the chalk lines can be seen through these materials.
- Staple or tape at the corners to hold the Vapor-Lock in position.
- Overlap Vapor-Lock 6" at all joints and apply duct tape to seal the seams (figure #8). The first piece of Vapor-Lock will be secured when the first row of flooring is installed.



STEP 4: INSTALLING THE FLOOR: STAPLE-DOWN INSTALLATION

- Using on of the approved staple guns, set the compressor as previously recommended.
- Fasten a sacrificial board to the floor. Check for surface damage, air pressure setting, tongue damage, etc. before proceeding. Make all adjustments and corrections before installation begins. Once proper adjustments have been made, remove and destroy the board.
- Begin installation with several rows at a time, fastening each board with at least two fasteners, 3-4" apart and 1-2" from the ends (to avoid splitting). Tighten boards as necessary to reduce gaps before fastening.
- End-joints of adjacent rows should be staggered 6" when possible to ensure a more favorable overall appearance. Install the floor from several cartons at the same time to get a more favorable overall appearance.
- The last 1-2 rows will need to be face-nailed where clearance does not permit blind nailing with stapler or brad nailer. Brad-nail or pre-drill and face-nail on the tongue side following the nailing pattern used for the first row.
- Rip final row to fit and face-nail. If the final row is less than 1" in width, it should first be edge-glued to the previous UNINSTALLED row and the two joined units should be face-nailed as one.

STEP 3: SPREAD THE ADHESIVE: GLUE-DOWN INSTALLATION

- Use the recommended trowel (figure #10) to get required spread rate and ridging height.

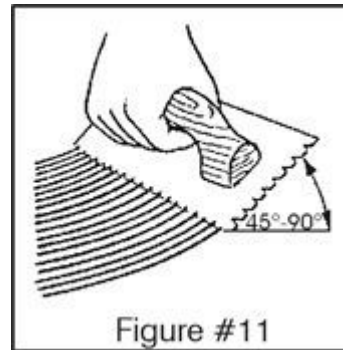


Figure #11

STEP 4: INSTALLING THE FLOOR: GLUE-DOWN INSTALLATION

- Use the longest, straightest boards available for the first two rows. The first row 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.
- When installing pieces, engage the end-joint first as close to side (long) tongue and groove as possible and then slide together tightly to engage 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.
- Check for a tight fit between all edges and ends of each plank. End-joints of adjacent rows should be staggered 6" when possible to ensure a more favorable overall appearance.
- If necessary, nail a sacrificial row with 1" nails on the dry side of your chalk line to help hold the first row in place.
- It may be necessary to align product with a cut-off piece of scrap as shown (figure #12 - Keep scrap angle low to avoid edge damage).
- To eliminate minor shifting or gapping of product during installation, use 3M 2090 Blue Mask Tape to hold the planks together. All Bruce Equalizer urethane adhesive should be cleaned from the surface BEFORE applying tape. Cured adhesive is VERY difficult to remove. After installation is complete, remove all the 3M 2090 Blue

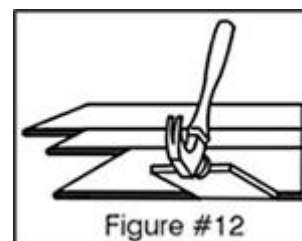
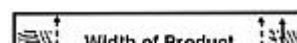


Figure #12



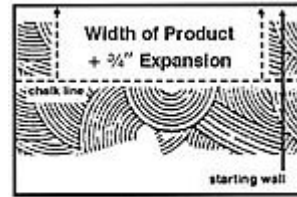


Figure #13

- For additional application instructions, follow the recommendations on the adhesive container. When not in use, keep the adhesive container tightly closed to prevent thickening. Thickening will cause difficulty in spreading the adhesive. Proper ventilation within the room must be provided.
- If the floor is to be covered, use a breathable material such as cardboard. Do not cover with plastic.
- Complete the installation using this same technique for the remainder of the floor, ripping the final boards to fit and allowing 3/4" expansion space.

INSTALLERS - ADVISE YOUR CUSTOMER OF THE FOLLOWING

SEASONS: HEATING AND NON-HEATING

Recognizing that wood floor dimensions will be slightly affected by varying levels of humidity within your building, care should be taken to control humidity levels within the 35-55% 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 wood 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.

FLOOR REPAIR

Minor damage can be repaired with a touch-up kit or filler. Major damage will require board replacement, which can be done by a professional floor installer.

ALL INSTALLATIONS

STEP 5: COMPLETING THE JOB

- Clean floor with the Bruce Adhesive Cleaner. Complete clean-up with a thorough cleaning using Bruce no-wax cleaner.
- Re-install any transition pieces that may be needed, such as Reducer Strips, T-moldings, or Thresholds. These products are available pre-finished to blend with your flooring.
- Re-install all base and/or quarter round moldings. Nail moldings into the wall, not the floor.

- Leave warranty and floor care information with the owner. Advise them of the product name and code number of the flooring they purchased.
- Do not cover the floor while the floor is still moveable. Do not cover with a non-breathable material such as plastic.
- To prevent surface damage avoid rolling heavy appliances and furniture on the floor. Use plywood, hardboard or appliance lifts if necessary

MOLDINGS

- Reducer Strip: a teardrop shaped molding. Used around fireplaces, doorways, as a room divider, or as a transition between Parquet and adjacent floor coverings that are less thick. Fasten down with adhesive 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. Always leave expansion beneath the undercut.
- 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 flooring to another or to gain expansion spaces. Fasten at the heel in the center of the molding. Leave expansion beneath the undercut on both sides.