

Engineered Hardwood Flooring Installation Instructions

NOTE: Please read carefully all installation instructions, maintenance recommendations and warranty information before opening all cartons.

Installer must document installation date, production code from carton end label, subfloor moisture content, flooring moisture content, site relative humidity and temperature. Installer should provide a copy of the documented readings to the homeowner to be retained with their invoice as proof of warranty.

Engineered Hardwood Flooring can be installed over most properly prepared subfloors and are engineered to be dimensionally stable, making them suitable for installation over all grade levels where moisture conditions do not exist.

We continuously make technological advancements that improve product performance or installation techniques or methods. To confirm you have the most recent installation instructions, please visit our website at www.mohawkflooring.com or contact Technical Services at 888-387-9881, Option 3

Caution: Wood Dust

Cutting, sanding or machining wood products produces *wood dust*. While wood products are not hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC) and the State of California have classified *wood dust* as a human carcinogen.

PROPOSITION 65 WARNING: This product produces *wood dust* when cut, sanded or machined. Wood dust is considered a carcinogen by the State of California.

Precautionary Measures: Airborne wood dust can cause respiratory, skin and eye irritation. Power tools should be equipped with a dust collector. Use an appropriate NIOSH-designated dust mask. Avoid dust contact with skin and eyes.

First Aid Measures in case of irritations: In case of irritation flush eyes with water. If needed seek medical attention. If dermatitis occurs, seek medical attention.

To request a Material Safety Data Sheet, call 888-387-9881, Option 3

WARNING! DO NOT MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUTBACK" ADHESIVES OR OTHER ADHESIVES.

Previously installed *resilient floor covering products* and the asphaltic or cutback adhesives used to install them may contain either *asbestos fibers* and/or *crystalline silica*. **The products in this carton DO NOT contain asbestos or crystalline silica.** Avoid creating dust. Inhalation of asbestos or crystalline 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 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 the 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 detailed information and instructions on removing all resilient covering structures.

INSTALLER / OWNER RESPONSIBILITY:

It is the responsibility of the installer and owner to ensure that job site environmental, sub-floor and subsurface conditions involved meet or exceed all requirements as outlined in installation instructions prior to installation. Manufacturer declines all responsibility for product performance or installation failure due to sub-floor, substrate or environmental deficiencies or jobsite conditions.

All work involving water or moisture (plumbing, masonry, painting, plastering) must be completed prior to flooring being delivered. Building envelope must be complete and exterior doors and windows installed. Exterior grading and gutter downspouts should be completed and permanent HVAC systems in operation for 14 days prior to flooring being delivered to job site. Measures should be taken to protect floors from other trade work. **Do not cover floors with plastic, red rosin, felt or wax paper or previously used cardboard.** Instead use a breathable material such as clean, dry, plain uncoated cardboard or Kraft paper. **Inks from printed cardboard could damage the hardwood floor.** The floor should be thoroughly cleaned before covering to remove grit and debris that would damage the finish. The floor must be completely covered to eliminate uneven ambering from exposure to UV light.

Manufacturer requires Engineered Hardwood products acclimate for 48 hours prior to installation. Acclimation allows flooring to achieve equilibrium moisture content (EMC) with the installation environment. All wood continually expands and contracts until it reaches moisture equilibrium with the environment in which it's installed. As with all wood flooring, expansion and contraction will be minimized if climate control is consistently maintained year round. **This is especially important with tropical species, because denser woods experience more significant shrinkage in low moisture / low humidity environments.**

Room temperature should be 60 – 80° F, with relative humidity between 35 – 55%. These environmental conditions are specified as pre-installation requirements and must be maintained for the life of the product.

Building interiors are affected by two distinct humidity seasons – Heating and Non-Heating. Care should be taken to maintain humidity levels between 35-55% year round. **Manufacturer warranties do not cover natural expansion and contraction which results in separation between planks, or damage caused by excessively low or high humidity.**

Heating season – Low Humidity, Dry. All heating methods create dry, low humidity conditions. Humidifiers are recommended to prevent excessive shrinkage or gapping in wood floors due to seasonal periods of low humidity.

Non Heating Season and Coastal or Waterfront Areas – High Humidity, Wet
During the non heating season proper humidity levels should be maintained by using an air conditioner, dehumidifier or by turning on your heating system periodically during the summer months.

Do not install in full bathrooms or powder rooms.

Examine flooring for color, finish and quality prior to installation. If material is unacceptable, contact the seller immediately. Wood is a natural product and contains characteristics such as variations in color, tone and graining. Flooring is manufactured in accordance with industry standards, which allows manufacturing and natural defect tolerances up to 5% of the total installation. Installer should work from several cartons at the same time to ensure good color and shade blend. Installer should not install undesirable pieces.

Flooring warranties DO NOT cover materials with visible defects once they are installed. Installer and Owner are responsible for final inspection of flooring manufacture, grade and finish. Purchase an additional 5% of flooring to allow for cuts and an additional 10% if installing diagonally.

WARRANTY NOTE: Installer should provide owner with one carton end label from product installed for warranty purposes. Owner should retain carton end label and copy of invoice for their records. Excess flooring should be retained and stored for future repairs in the event planks are damaged.

The use of stain, filler or putty for correction is considered a normal practice and a routine part of installation.

TOOLS: BASIC TOOLS AND ACCESSORIES:

Broom	Mohawk Ultra Tack M959 Adhesive-Sealer
Terry Cloth Towels	Putty Knife
Coordinating transition strips or molding	Mineral Spirits
Coordinating stain, filler or putty	Hand or Electric Jam Saw
Chalk line	Power Circular Saw or Miter Saw
Thick felt or rubber pads	Wood/Concrete Moisture Meter or Both
Safety Glasses	½ Inch Wood Spacers
Straight Edge	Table Saw
Tape Measure	Carpenter's Square
Pry Bar or Trim Puller	Utility Knife
Pencil	Pull Bar
15 Lb. Saturated Felt	Mohawk D3 Rated Floating Floor Glue
Uniclic Tapping Block	3M Blue #2080 Tape
Plastic Scraper	
Mohawk Protack M908 Urethane or Columbia Urethane Adhesive	
Mohawk Protech M901 Moisture Membrane	
Mohawk FloorCare Essentials Hardwood & Laminate Flooring Cleaner or	
Columbia Hardwood Flooring Cleaner	

For Floating Installation: Use Performance Accessories Underlayments or products that meet or exceed these products' specifications. **The use of accessories other than Performance Accessories might cause damage to the Engineered Hardwood Flooring.** Therefore, we recommend products specifically designed and tested for use with Engineered Hardwood Flooring.

For Direct Glue Installation: When using Mohawk's Protack M908 or Columbia Urethane Adhesives apply adhesive with a ¼" x 3/16" x ½" V Notch Trowel. Mohawk's M959 Adhesive-Sealer has trowel clips inside the pail. For Mohawk's Protech M901 Urethane Moisture Membrane, apply with a 5/32" x 3/16" V Notch Trowel for moisture retarder membrane application or products that meet or exceed manufacturer's adhesive and sealer specifications. When installing on concrete subfloors, trowels should be replaced every 3000 ft.. Never use a water based adhesive to install Engineered Hardwood Flooring.

STORAGE AND HANDLING:

Flooring should be delivered and stored at the jobsite for 48 hours prior to installation to allow the product to acclimate from prior transport or storage conditions. Flooring should be stored with at least a four inch air space under cartons. Do not open cartons but remove any plastic wrap that may have been used to ship the material. This is especially important if you live in a very humid or dry climate.

PRE-INSTALLATION & JOB SITE CONDITIONS

SUBFLOOR REQUIREMENTS:

The following subfloor recommendations are intended to complement the installation of hardwood flooring as an interior finish. **Hardwood flooring is not a structural component.** These recommendations are not intended to supersede federal, state or local building codes, but as with many other interior finish products, may require modifying existing structural components for a successful installation.

NOTE: When joist spacing exceeds the traditional 16 on center, Mohawk recommends you apply a thin bead of Mohawk Tongue & Groove D3 glue to the bottom side of the groove to lock the tongue and groove profile in place. This will reduce the potential for movement of the tongue and groove, which may contribute to squeaking or crackle. When using this new method of installation, you may continue to choose to staple or nail down the hardwood depending on your preference. Using D3 T&G glue with the staple or cleat reduces movement as the subfloor deflects.

SUBFLOOR PREPARATION RECOMMENDATIONS FOR ALL INSTALLATIONS:

Engineered Hardwood Floors may be installed over any structurally sound subfloor that is flat, clean and dry on all grade levels. Do not install in full bathrooms or powder rooms.

All subfloors should be:

- **CLEAN** – Subfloor must be clean and free of dirt, curing compounds, drywall mud, wax, paint, oil, sealers, adhesives and other debris. These may be removed mechanically.
- **FLAT** – Within 3/16" in 10' radius (5 mm in 3 m) and/or 1/8" in 6' radius (3 mm in 2 m). Sand high areas or joints. Fill low areas with a high compressive strength (min. 3,000 psi) Portland base compound.
- **DRY** – Select the appropriate moisture indicator test specifically designed for use with wood or concrete subfloors. Test and record moisture content results.
- **STRUCTURALLY SOUND** – Nail or screw any areas that are loose or squeak. Wood panels should exhibit an adequate fastening pattern, glued/screwed or nailed as that system requires, using an acceptable nailing pattern. Typical: 6" (15 cm) along bearing edges and 12" (31 cm) along intermediate supports. Flatten edge swell as necessary. Replace any water-damaged, swollen or delaminated subflooring or underlayment.

Building codes establish requirements for structural support components of flooring systems which may not provide adequate rigidity and support for proper installation and performance of a hardwood floor. Whenever possible, install flooring perpendicular to the floor joists for maximum stability.

NOTE: Avoid subfloors with excessive vertical movement or deflection because subfloor movement will telegraph through to the finished installation. Indications of excessive deflection are uneven finish wear, fastener release, squeaking, compromised or damaged locking systems, sectional contours such as bowing or dipping in floors and uneven flooring material. Nail or screw subfloor panels to secure boards with excessive vertical movement or deflection. 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. Our warranties DO NOT cover any problems caused by inadequate substructures or improper installation of said substructures.

Subfloor moisture check

Note: To increase reliability, moisture testing should be performed after the HVAC system has been in operation for a minimum of 14 days. Excess moisture on any flooring substrate if not identified and corrected prior to installation will cause floor covering failure. **Warranties DO NOT cover products installed over improperly prepared subfloors, substrates or environmental related deficiencies.**

Acceptable conditions for above, on and below grade applications are:

Concrete Subfloor Moisture Content

On and below grade applications are susceptible to moisture and should be tested for moisture prior to installation in several locations within the installation area. Acceptable conditions for above, on and below grade applications on concrete are:

- Less than 3 lbs./1000 sq. ft./24 hrs. Calcium Chloride Test (ASTM F1869) or
- Less than 75% RH Levels in Concrete Using In-situ Probes (ASTM F 2170-02) or
- No greater than 5% on a Tramex Concrete Moisture Encounter meter or equivalent concrete moisture meter.

DO NOT INSTALL FLOORING IF MOISTURE TESTS RESULTS EXCEED RECOMMENDED LIMITS.

NOTE:

New concrete slabs require a minimum of 60 days drying time before covering them with a wood floor. (Must be fully cured) Although initial moisture tests may indicate a dry slab, the moisture content of slabs may increase due to seasonal fluctuation or weather patterns. New construction should have a minimum 10 mil poly membrane between the ground and concrete.

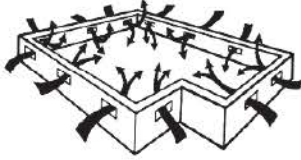
Wood Subfloor Moisture Content

Test both wood subfloor and wood flooring for moisture content using a reliable pin type moisture meter. The subfloor material must not exceed 12% moisture content.

The difference between the moisture content of the wood subfloor and the hardwood flooring must not exceed 4%.

If subfloor moisture readings exceed recommended levels for concrete or wood, steps **MUST** be taken to reduce subfloor moisture. Steps could include waiting for subfloors to dry to acceptable levels or using an appropriate moisture barrier such as Mohawk's Protech M901 Urethane Moisture Membrane.

NOTE: Basements and crawl spaces must be dry. Use of a 6 mil black polyethylene membrane is required to cover 100% of the crawl space earth. Crawl space clearance from ground to underside of joist should be no less than 18" and perimeter vent spacing should be equal to 1.5% of the total square footage of the crawl space area to provide cross ventilation.



To correct any subfloor conditions concerning moisture, either wait until the subfloor dries to meet specifications or use an appropriate moisture barrier. For more information concerning moisture conditions, contact Technical Service Department at 888-387-9881 Option 3.

Concrete Subfloor

Lightweight concrete

To test for lightweight or acoustical concrete, scrape a coin or key across the surface of the subfloor. If the surface powders easily or has a dry density of 100 pounds or less per cubic foot, Engineered Hardwood flooring should be installed as floating only. Only engineered flooring 4 plies or thicker may be installed as floating.

Wood Subfloors

NOTE: As with many other interior finish products, modification of existing structural components may be required for a successful installation.

Solid Wood Subfloors - Direct Glue or Floating Installations

- 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 direct glue-down applications add 3/8" (9.5 mm) approved floor panel underlayment.

Existing Wood Flooring – Direct Glue or Floating Installations

- Existing engineered flooring must be well bonded/fastened. When gluing over existing wood flooring, the surface finish must be abraded or removed to allow adequate adhesive bond.
- Existing solid hardwood 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 or engineered flooring attached directly to concrete.**

Wood subfloors should be well nailed or secured with screws. Nails should be ring shank and screws need to be counter sunk. The wood subfloor needs to be structurally sound (meaning subfloors without loose boards, vinyl or tile). If sub-floor panels are a single layer, less than 3/4" thick, add another single cross layer for strength and stability (minimum 3/8" thick for a total 1 1/8" thickness). Underlayment floor panels 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. When installing parallel to the floor joists it may be necessary to increase rigidity of the structural subfloor system by installing an additional minimum of 3/8" (9.5 mm) approved underlayment floor panel.

Approved underlayment floor panels should meet or exceed the following:

- **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 floor panel 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 floor panel underlayment.
- **Wafer board 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 floor panel underlayment.
- **Particleboard:** Must be a minimum 40-lb. density, stamped underlayment grade and 3/4" (19 mm) thick. (Floating installation only)

Mohawk's M908 ProTack Urethane Adhesive or Columbia Urethane Adhesive and Mohawk's M959 Adhesive/Sealer are the recommended wood flooring adhesives that may be used for above, on, and below grade applications and on all common substrates except particleboard and sheet vinyl.

Sub-floors other than wood or concrete:

Note: Perimeter glued resilient vinyl and rubber tiles are unacceptable underlayments and must be removed.

Terrazzo, Vinyl, Resilient Tile, Cork and Linoleum or hard surfaces that are dry, structurally sound and level are suitable as a sub-floor. As above, the surface must be sound, tight and free of paint, oil, existing adhesives, wax, grease and dirt. Terrazzo and ceramic tile must be scuffed to assure adhesion.

Warning! Do not sand existing resilient tile, sheet flooring, backing, or felt linings. These products may contain asbestos fibers that are not readily identifiable. Inhalation of asbestos dust can cause asbestosis or other serious bodily harm. Check with local, state and federal laws for handling hazardous material before attempting the removal of these floors.

Direct Glue Installation: Make sure the floor covering materials are well bonded to the subfloor/underlayment with full spread adhesive and no more than two layers thick, not to exceed 3/16" (5 mm).

With approved wood/wood composite subfloors, if vinyl or tiles are loose, broken, or in poor condition, install a 3/8" (9.5 mm) approved subfloor panel directly over the flooring materials.

Clean the flooring materials as necessary to remove waxes, sealers or cleaning residues to allow a good adhesive bond.

Cork floor sealers and surface treatments must be removed.

Always check for adequate adhesive bond prior to beginning direct glue installation.

Radiant Heat Subfloors

It is important to follow these guidelines strictly. Failure to follow these guidelines may produce unsatisfactory results.

Only floating installations are approved for radiant heat systems. Direct glue down and Nail Down are NOT RECOMMENDED.

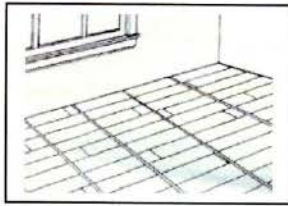
Before installing hardwood over radiant heat subfloors, determine if the radiant heat system is rated to be compatible with hardwood flooring. It is highly recommended the radiant heat system be designed specifically to accept hardwood flooring. **Radiant heat systems designed for floor coverings with a higher resistance to heat transfer such as carpet will damage wood flooring.** Single heat circuit systems designed for use with multiple floor covering products must be adjusted to work at temperatures suitable for hardwood flooring. **Use of an in floor temperature sensor as well as a separate thermostat for the individual room is required. An outdoor temperature sensor should be used to adjust water temperature according to anticipated heat loss.**

Note: When radiant heat is installed in concrete, mortar beds, or gypsum cement, it is very important to operate the radiant heat system until these are completely dry before you install your hardwood flooring on top. This may take several weeks. Also operate the HVAC system to allow humidity levels in the area to stabilize (35-55% RH) for the area in which the hardwood floor will be installed. Allow hardwood to acclimate to this humidity level before installation. This will minimize dimensional changes due to moisture.

Before installing over a radiant heat floor turn off heat and wait until the floor has reached room temperature (70°-75°F). After installing the floor, gradually return the heat in 5 degree increments. **CAUTION: The floor surface must never exceed 85°F.**

Before You Start

- Plan your layout and determine the direction of the installation in the room. Planks installed parallel to windows accent the hardwood best.
- Blending of Cartons: To achieve a uniform installation appearance, preselect and set aside hardwood planks that blend best with all trims and moldings. Install these planks next to best blended moldings.
- Remove all wall mounted moldings such as base and quarter round.
- Floor should be installed blending planks from several cartons at the same time to ensure good color and shade mixture throughout the installation.
- Be attentive to staggering the ends of the boards at least 4"-6" (10-15 cm) when possible, in adjacent rows.
- The floating floor underlayment already has double-sided tape for ease of taping the precut overlapping seams. If a non-adhesive underlayment is used, tape all seams.
- Do not install in areas of high moisture such as bathrooms and powder rooms.



PREPARATION:

Undercut Door Casings: Undercut all door casings 1/16" higher than the thickness of the flooring materials being installed. To do this, use a scrap piece of flooring as a guide. Lay it on the substrate and cut the casing with a handsaw or use a power jamb saw set at the correct height. Remove all moldings and wall-base, and undercut all door casings.



FLOATING INSTALLATION

NOTE: Only Engineered Hardwood Flooring with 4 plies or more are approved for floating installations.

Underlayment:

Use Performance Accessory Underlayments or equivalent underlayment with equal or better specifications. Underlayment requirements are very critical to a floating installation. Excessive pad compression or compaction is a common cause of seam failure.

Lay the underlayment on the floor with the moisture barrier facing up. The direction of the underlayment should be parallel to the direction of the floor. For the first row of flooring the underlayment should be placed so that approximately 1 inch overlaps onto all perpendicular walls. Place the following row next to the first row on top of the lower moisture barrier overlap. Remove the adhesive strip and fold back the upper overlap on the second row. Make sure the underlayment fits together tightly (don't leave gaps). On the last row, place the underlayment 1 inch up the wall. To join rolls on the short side of the underlayment, use a moisture resistant tape to connect the 2 pieces so water cannot penetrate the underlayment.

Expansion Space:

An expansion space of at least 1/2 inch must be maintained around the perimeter of the room, all pipes, counters, cabinets, fireplace hearths, doorframes and any other fixed vertical objects in the room. **Doorway or archways 4 feet or less and rooms larger than a 26 X 33 are required to have a T-Molding.**

Glue and Glue Placement:

The recommended glue for floating installation is Mohawk Tongue & Groove D3 Rated Floating Floor Glue. The glue must be placed along the topside of the groove the full length of the grooved side and end. This can be accomplished by inverting the

plank and applying a bead of glue (3/32") to the topside of the groove (side of the groove nearest the face of the plank), when the plank is turned back over the glue will flow down the back of the groove allowing total coverage. Apply only a 3/32-inch bead of glue; if the groove is filled with glue it will be difficult to close the seam not allowing a tight fit.

Getting Started:

The installation begins with three rows of flooring glued together and held in place with 3M blue painters tape (#2080) with the groove side facing the wall. Spacers must be used to establish the minimum 1/2" expansion space from the walls. These three rows must be straight, square and in rack because they establish the alignment of the rest of the floor. After putting these three rows together allow the glue to set (15 to 45 minutes) before proceeding with the installation. With the tongue facing out the planks can be tapped together with a tapping block on the tongue to make a snug fit. After installing 8 or 10 rows of flooring stand back and check for crowning or heaving due to tension strapping or any damage caused by improper taping.

CLEAN AS YOU GO:

If any glue squeezes out of the seam between the planks allow it to dry for 10 to 15 minutes and then lightly scrape it away with a plastic scraper or putty knife, any glue left may be cleaned with a damp cloth. Do not allow the glue to dry on the face of the flooring; it will be very difficult to clean off.

Starting Off - The First Three Rows

Row One:

Plank 1 should begin in the left hand corner of the room. Spacing around the wall perimeter of 1/2" can be maintained by using wood wedges. The planks are laid with the groove side facing the wall. The first row starts with a full length board; working from left to right will be required when installing engineered hardwood flooring. Slide the end groove of the board being installed into the end tongue of the board you previously installed. Place each plank firmly against the wood wedges. After setting the first row and making sure you are against a firm starting point, lay out three to four rows before starting to install.

(Figure 3) Plank 2 end tongue is connected to the end groove of Plank 1. Lay the rest, plank after plank, in this manner until you have completed the first row. Cut the last plank accordingly. Please ensure that this first row is straight using the wedges to maintain proper 1/2" expansion space from the wall.

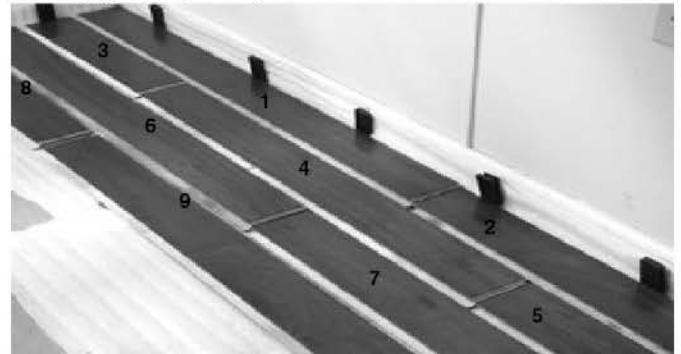


FIGURE 3

Row Two:

When possible use leftover plank from the first row to begin the second row. The leftover piece from the first row should be considered for this starter piece to minimize waste. Initial layout of material will allow you to check your end seams to ensure they are not too close. End joints on adjoining rows should be offset by no less than 6". Align this plank and lock the side into place against the first plank in row 1. The next plank is aligned with the end joint first into the previously plank in row 2. The side of plank is then tapped lightly against the previously laid row. Continue laying in this way across the entire row. Remove the fitting wedge and press in the row of planks with a light pressure on the long side. The planks lock into each other. The Unclit Tapping Block square edge tapping block is needed to aid in the connection of the locking system on the long side. The planks are now laid row after row in this sequence.

Row Three and Remaining Rows:

Move rows if necessary to ensure that you are not showing any undesirable joint patterns. (Figure 2A) The rest of the row's end joints should be random throughout the floor. (Figure 1A) Your first three rows are staggered ensuring that offset of previous row with end joints are no closer than 6" from one another. When the planks are being tapped in place, a non-random pyramid or stair step pattern is used to ensure the planks remain engaged through the force of the tapping. The numbered process is shown in Figure 3.

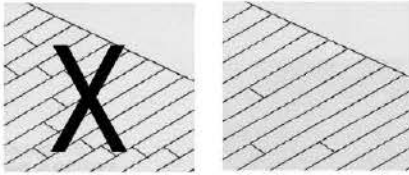


Figure 2A Figure 1A

Most often walls are not structurally square. Planks in the first row may need to be scribed and cut to contour the first row with the wall and to allow for 1/2" expansion. Allow 1/2" expansion space at all vertical obstructions. Use 1/2" wood wedges or short cut 1/2" pieces of the floor against the wall to hold planks true to spacing. It is important that the planks follow the wall. Scribing is used if the wall is not straight. First, mark the plank with a scribing tool or other tool that will allow you to follow the shape of the wall and then cut it lengthwise to follow the line. (Figure 2)



FIGURE 2

NOTE: Another way to achieve a firm starting point is to screw down a straight length of 1"x3" lumber, or another straight, firm material along the full length of the starter wall. This is set to the outside edge the distance of the width of your end planks plus the 1/2" expansion. You will be removing this after the rest of the floor is installed and the space filled and ripped to size the flooring.

Tapping the planks together

When tapping the planks together the following process works best: 1) Using the Uniclic Tapping Block, lightly tap each piece for the first 3-4 rows. After the first 3-4 rows, you should only need the Uniclic Tapping Block every third row. Start tapping in the plank at the opposite end along the length working from left to right, making sure the plank fully engages as you progress down the length. (Figure 4)

2) When end joint is slid into place on the preceding plank, raise the plank now being installed to an approximate 45° angle while setting the side joint into place. (Figure 6)

3) When you have the plank in place, lower the plank while pushing in until plank locks in place. The planks should lock into place at this point. (Figure 7)

Your initial rows, if you are not against a firm starting structure, it may seem more difficult to engage than the preceding rows.

The Uniclic Tapping Block square edge tapping block is needed to distribute equal force across the tongue without any damage. (Figure 4 and Figure 5)) For best results, slide the tapping block along the sub floor and row, tapping lightly with a hammer, using tapping strokes to engage the locking system. If the planks are not going together, check to see if the planks are moving against the wall with the strikes. If so, adjust shims to firm up or use the screw down starter row method.

FIGURE 4

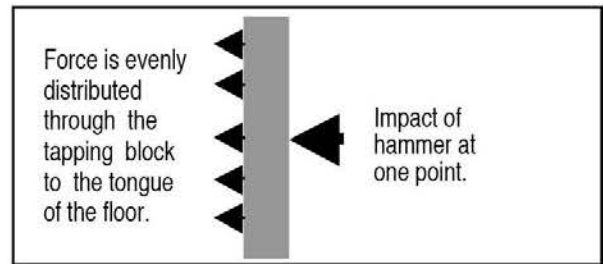


FIGURE 5



FIGURE 6

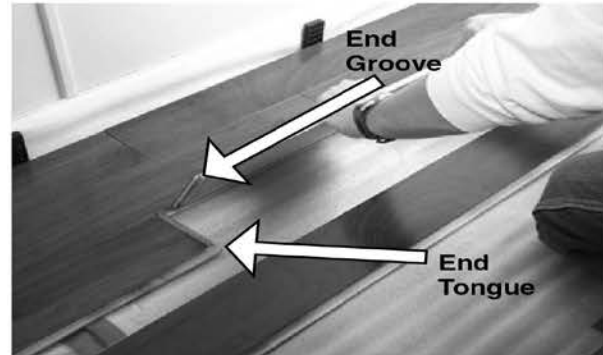


FIGURE 7



FIGURE 8



WARRANTY:

Warranty for separation of planks is the responsibility of the installer.

Staple or Nail Down Instructions

STAPLE OR NAIL DOWN INSTALLATIONS

Note: Engineered wood flooring products that are 5/16" thick are not approved for staple or nail down installation. The recommended method of installation is direct glue down only.

Engineered hardwood floors may be installed over wood sub-floors using staples or flooring cleats, with the exception of Luan, Parquet or Masonite. When installing engineered wood planks or strips by nailing or stapling it is necessary to use the proper type of flooring stapler or nailer made for the thickness of the engineered wood flooring that is being installed.

Note: In addition to the ground cover in the crawlspace, a 6-mil polyethylene layer or a 15lb felt or rosin paper must be installed over the subfloor prior to the installation of the engineered wood flooring in order to reduce squeaks and noises created by the opposing floors.

Installing 6-mil Polyethylene

Install the polyethylene parallel to the direction of the flooring and allow a 3" overhang at the perimeter. Make sure each run of polyethylene overlaps the previous run by 6" or more.

Layout the job

Measure out from the ends of your starting wall, 2 3/4" when installing 2 1/4" strip flooring or 3 1/2" when installing 3" planks and mark both ends. Where possible lay the flooring at 90° angles to the floor joists. Make a chalk line along the starting wall using the marks you made.

Beginning installation

Note: Expansion space is required along the perimeter of room(s) of intended installation; expansion space is dictated by the thickness of the product, for example, 3/8" thick floor requires 3/8" expansion space, 1/2" thick floor requires 1/2" expansion space; 3/4" thick floors require 3/4" expansion space.

Place the planks with the tongue facing away from the wall and along your chalk line. Use brads or small finishing nails to secure the first starter row along the wall edge 1" to 2" from the ends and every 4" to 6" along the side. Counter sink the nails and fill with the wood filler that blends with the flooring installed. Place the nails in a dark grain spot in the board. The base or shoe molding will cover the nails when installed after completion of the installation.

Blind nail at a 45 degree angle through the tongues. It will be easier IF YOU PRE-DRILL THE HOLES IN THE TONGUES. Nail 1" to 2" from the ends and every 4" to 6" along the sides. It will be necessary to blind nail the next 2 rows. A brad nailer with 1" to 1 3/8" brads can also be used to blind nail and no pre-drilling is needed.

Continue the installation using an engineered wood-flooring stapler, using recommended staples or nails. Nail or staple the flooring 1" to 2" from the ends and every 4" to 6" along the edge tongues.

Recommended Pneumatic Floor Stapler

When stapling, use a 20 gauge, 1" staple or 18 gauge, 1" or longer staple on products up to 3" wide and 1/2" thick. When installing a 5" wide product or wider, use an 18 gauge 1-1/4" staple or longer. **(Note: you must use an appropriate adapter for the thickness of the wood on some flooring staplers).** Also note: 3/4" thick engineered planks should be nailed or stapled using a 3/4" solid wood flooring nailer or stapler of

any brand using the recommended size staple or cleat for 3/4" solid wood installations and the nailing schedule which is 1" to 3" from the ends and 8" to 10" in the field. You must staple or nail 1" to 2" from the ends and every 4" to 6" along the tongue side of the engineered wood product. This will help insure a satisfactory installation. It is recommended to initially set the compressor at 80 to 85 PSI and adjust the pressure as needed in order to properly set the fastener and keep the staples from going through or breaking the tongues. Improper stapling techniques can cause squeaks in the floor.

Adjustments may be necessary to provide adequate penetration of the nail or staple into the nail bed. You want it flush in the nail pocket. Use a scrap piece of flooring material to set tools properly before installation.

Final Touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity.

Complete the job by using the wood filler that coordinates with the installed engineered flooring to fill any gapping along the joints or areas where brad nails were used in the trim or the flooring. Clean the finished floor with Mohawk FloorCare Essentials Hardwood & Laminate Cleaner or Columbia Hardwood Floor Cleaner.

GLUE DOWN INSTALLATION GUIDELINES

If an excess subfloor moisture situation exists it is recommended to use Mohawk's M959 Adhesive-Sealer or Mohawk's Protech M901 Urethane Moisture Membrane must be applied before installing with Mohawk's ProTack M908 Urethane Adhesive or Columbia Urethane Adhesive.

Use of these or products with equal or greater specifications are necessary for warranty compliance.

If subfloor moisture is below recommended levels, simply follow direct glue installation instructions below.

INSTALLING PROTECH M901 MEMBRANE:

ProTech M901 Urethane Moisture Membrane: A trowel-applied membrane that improves the long-term performance of direct glue-down wood-flooring installations over concrete substrates.

TYPICAL TROWEL AND APPROXIMATE COVERAGE*

5/32" x 3/16" 40 to 45 sq. ft./U.S. gal.

* Coverage may vary depending on substrate conditions.

USES

- For protection from concrete moisture (up to 25 lbs. MVER)
- For reducing sound transfer in multi-story buildings
- For improving flexibility and increasing bond strength of installations

Note: Do not apply over self-stick tile, sheet vinyl, old adhesives, metal, linoleum, laminate, particleboard or strip wood subfloors. Air temperature must be between 50°F and 100°F for applying ProTech M901 Urethane Moisture Membrane.

APPLICATION

1. Regulate temperature and humidity 72 hours before, during and after installation.
2. Complete undercuts **before** applying Protech M901. Include the additional 1/16" height of Protech M901 when calculating undercuts.
3. Pour ProTech M901 onto substrate (no mixing necessary).
4. Using the notched side of a 5/32" x 3/16" V-notched trowel, spread Protech M901 evenly. Product will flatten out naturally.
5. Allow to dry completely (12 to 16 hours).
6. Correct any missed spots and voids with trowel's flat side.
7. Allow repair areas to dry completely.
8. While membrane is fresh, clean tools using a urethane adhesive cleaner or mineral spirits. Protech M901 is extremely difficult to remove when cured.
9. Install Engineered Hardwood flooring using either Mohawk's ProTack M908 or Columbia's Urethane Adhesives.

NOTES

- Product must be used in its entirety when opened. Lid cannot be re-sealed.
- Temperature and humidity will affect the curing time. The higher the temperature and humidity, the faster the cure.

Getting Started Direct Glue:

There are two ways to install when using a moisture cured urethane wood flooring adhesive (wet lay meaning to lay directly into wet adhesive and dry-lay method meaning to allow the adhesive to flash or to tack up.)

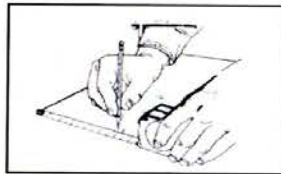
Caution: Whether you choose to install using the dry or wet method follow all guidelines set by the adhesive manufacturer as well as the flooring manufacturer. By not adhering to the guidelines you can void your flooring warranties.

General Information for Glue-Down Installations

1. Use cement-based patch, skim coat leveling products to correct substrate imperfections.
2. Regulate temperature and humidity 72 hours before, during and after installation.
3. At least 48 hours before installation, place cartons of wood flooring in area to be installed.
4. Install and secure starter row.
5. Spread adhesive using recommended trowel, ensuring 95 to 100% adhesive contact.
6. Wet Lay method: press flooring firmly into adhesive immediately after troweling.
7. Inspect the installation and remove any adhesive smudges or drops immediately.
Note: Urethane adhesive is very difficult to remove once dry and cured. Make every effort to prevent adhesive from getting on the flooring surface. For best results, keep a urethane adhesive cleaner nearby to remove any adhesive smudges or drops during installation.
8. Clean tools while adhesive is fresh using a urethane adhesive cleaner or mineral spirits.
9. Avoid light/regular traffic for at least 12 hours. Avoid heavy traffic for at least 24 hours.
10. See adhesive manufacture guidelines for OPEN TIME on the adhesive container.
11. Proper ventilation within the room must be provided. An electric fan is helpful.

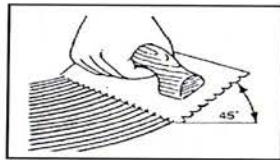
Step 1 (Wet Lay Method)

Select a starter wall. It is recommended to start the installation along an exterior wall. It's more likely to be straight and square with the room. Measure out from the wall the width of two planks and mark each end of the room and snap your chalk line.



Step 2

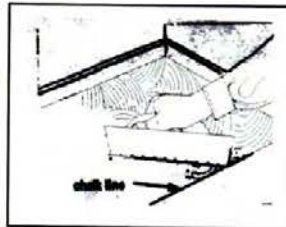
Spread Mohawk's Pro-Tack M908 Adhesive from the chalk line to the starter wall using the recommended trowel size. It is important to use the correct trowel at a 45° to get the proper spread of adhesive applied to the sub-floor, which will produce a proper and permanent bond. Improper bonding can cause loose or hollow spots.



Note: Change the trowel every 2000 to 3000 square feet due to wear down of the notches. This assures you always get the proper spread of adhesive.

Step 3

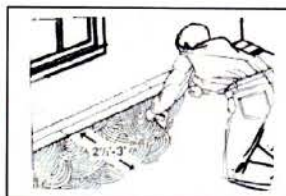
Install the first row of starter planks with the tongue facing the starter wall and secure into position. Alignment is critical and can be achieved by securing a straight edge along the chalk line (2x4's work well), or by top nailing the first row with finishing nails (wood sub-floor), or adjustable spacers (concrete sub-floor). This prevents slippage of the planks that can cause misalignment.



Note: The planks along the wall may have to be scribed and cut to fit in order to maintain a consistent expansion space since most walls are not straight. Try to maintain at least 2" on the scribed plank.

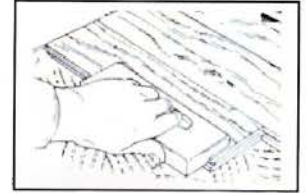
Step 4

Once the starter rows are secure spread 2 1/2 to 3 feet of adhesive the length of the room. (Never lay more adhesive than can be covered in approximately 2 hrs.) Place tongue into groove of plank or strips and



press firmly into adhesive. Never slide planks or strips through adhesive. Use Uniclic Tapping Block to fit planks snug together at side and butt ends. Clean any adhesive off the surface before it cures using clean terry cloth towels and mineral spirits.

Note: Never work on top of the flooring when installing. If you must work on top of the newly laid flooring use a kneeling board.



Secure your starter rows with a straight edge (2x4's). Once the remainder of the floor has been installed go back to the beginning and remove the straight edges and spread adhesive on the remainder of the open subfloor. Remember planks closest to the wall may have to be scribed and cut to fit due to irregularities along the wall. When using Mohawk's Pro-Tack M908 adhesive it is not necessary to roll the floor.

Clean Up

Use clean white terry cloth towels to clean as you go along with mineral spirits. It is easy and convenient to use. Adhesive that has cured on the surface of the flooring can be difficult to remove.

Light foot traffic is allowed after 12 hours but wait 24 hours after installation to remove the 3M blue masking tape. Once the tape is removed clean any adhesive residue left from the tape using mineral spirits on a clean white terry towel.

Final Touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity.

Complete the job by using the wood filler that coordinates with the installed engineered flooring for minor corrections or areas where brad nails were used in the trim or the flooring. Clean the finished floor with Mohawk's FloorCare Essentials Hardwood & Laminate or Columbia Hardwood Floor cleaners.

Trim excess underlayment (floating installation only) and install or re-install any transition pieces, reducer strips, T-moldings, thresholds, bases and/or quarter round moldings. Trims and moldings should be nailed into the wall, not the floor.

To prevent surface damage, avoid rolling heavy furniture and appliances on the floor. Use plywood, hardboard or appliance lifts if necessary. Use protective castors/castor cups or felt pads on the legs of furniture to prevent damage to the flooring.

Clean Up

Use clean white terry cloth towels to clean as you go along with mineral spirits. It is easy and convenient to use. Adhesive that has cured on the surface of the flooring can be difficult to remove. Measures should be taken to protect floors from other trade work. If the floor is to be covered, the floor should be thoroughly cleaned prior to covering to prevent grit damage to the finish. Do not cover with plastic, red rosin, felt or wax paper or previously used cardboard. Instead use a breathable material such as clean, dry, plain uncoated cardboard or Kraft paper. Inks from printed cardboard could damage the hardwood floor. A common reinforced builder's paper is a good choice. Any covering should be taped, using a low-adhesion tape, to base or shoe moldings. Avoid taping to finished flooring. When taping paper or sheets together, tape them to each other, not to the floor. The floor must be completely covered to eliminate uneven ambering from exposure to UV light.

MAINTENANCE

Engineered Hardwood Floors are very easily maintained. No wax, no mess. Simply use Mohawk's FloorCare Essentials Hardwood & Laminate or Columbia Hardwood Floor cleaners and a terry cloth flooring mop.

STEP ONE: Sweep your floor to remove any particles that could scratch your floor.

Warning: Vacuums with a beater bar or power rotary brush head can damage a wood floor and should never be used.