

Lakehaven

4.5mm Locking/Floating Luxury Vinyl Plank Installation Instructions

General Information

Important Information: The current product documentation, including installation and maintenance instructions, product data sheets, adhesive labels, and limited warranties (including exclusions and restrictions) shall be read, understood and followed. Ensure that all subfloor and substrate and preparation, including any required moisture testing, has been completed, reviewed, and understood by all involved parties before installation. Do not proceed until all conditions are met as no subfloor, installation or site-related issues are covered under warranty.

The product should be used in 40°F (4°C) to 90°F (32°C) temperatures. Avoid extended exposure to temperatures above 90°F (32°C), which may cause discoloration, warping, or damage. Do not install outside or expose the flooring to direct sunlight, prolonged UV/IR radiation or high heat sources, such as self-cleaning ovens, as these conditions can lead to discoloration, damage, or excessive product movement. Avoid installing in areas where sharp or pointed objects (such as stiletto heels or cleats) may be present, as they may damage the product. Do not use rubber tires, rubber casters, or rubber-backed mats directly on the flooring, as they may cause permanent stains. For a complete list of suitable installation environments and special considerations for wet areas, consult the Material Usage Guide and, if applicable, the Wet Areas Technical Bulletin.

All materials should be delivered to the installation site in their original packaging with labels intact. While mixing materials from different lots will not affect performance, it may lead to noticeable visual differences in shading or texture, so it is not recommended or covered under warranty. If required, compare different lots under various lighting conditions before installation to ensure customer approval. ASTM documents can be purchased at www.astm.org.

Receiving Material & Storage: Remove all plastic and strapping from the product after delivery. Confirm that the flooring product color, style and quantity are correct, and check lot numbers. In the event there is more than one product, color, style or lot number, separate and mark each one for easy identification. Carefully check all materials for shipping damage and note all damage on the bill of lading before accepting the delivery. Material accepted with visible shipping damage that is not reported on the bill of lading is not covered under warranty. The floor covering and accessories must be stored in dry indoors conditions between 40°F to 90°F (4°C to 32°C). Do not store outside (even in containers) and do not stack pallets.

Recommended Tool List:

- Safety Glasses
- Cut-Resistant Gloves
- Dust Mask
- Knee Pads

- Appropriate Substrate Preparation Tools
- HEPA-Filtered Vacuum
- 10-foot and 6-foot Straight Edge or Level
- Tape Measure
- Pencil
- Speed Square
- Utility Knife with New Blades
- Chalk Marking Line
- 2 lb. Soft-Faced Dead Blow Hammer (preferred) or Rubber Mallet
- Wedge Spacers
- Pull-Bar
- Jigsaw with Carbide Blades (for complicated cuts)
- Oscillating Multi-Tool or hand saw (for door jambs)
- Non-Contact Infrared Thermometer

Warning: All local, state, and federal regulations must be followed; this includes the removal of in-place asbestos flooring and adhesive, as well as any lead-containing materials. The Occupational Safety and Health Administration (OSHA) has exposure limits for people exposed to respirable crystalline silica; this requirement must be followed. Do not use solvent or citrus-based adhesive removers. When appropriate, follow the Resilient Floor Covering Institute's (RFCI) Recommended Work Practice for Removal of Existing Floor Covering and Adhesive. Always wear safety glasses and use respiratory protection or other safeguards to avoid inhaling any dust. The label, installation, and maintenance instructions along with the technical data sheet, limited warranty and any appropriate Safety Data Sheet (SDS) of all products must be read, understood, and followed prior to installation. Do not leave spills unattended - wipe up promptly, and allow the floor covering to dry before allowing foot traffic.

Documentation: Record and/or photograph the site conditions, test results, and any corrective measures taken. All relevant pre-installation documentation, as well original product invoices and associated shop drawings or project information, should be stored for the entire warranty period.

Substrate & Subfloor Preparation

Flatness Requirements: All substrates must be checked prior to installation. It must have a floor flatness of FF32 or have a maximum deviation of 3/16 inch (3.9 mm) over 10 feet (3.05 m), or 1/8 inch (3.18 mm) over 6 feet (1.83 m), and 1/32 inch (0.8 mm) over 12 inches (305 mm), when measured using the *ASTM E1155/E1155M Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers* or another industry-recognized method. If required, it must be corrected before installation. Failure to meet this flatness may affect the limited wear warranty.

and must be agreed upon with the customer or end-user before installation.

Concrete Substrate Requirements: All concrete must be at least 28 days old, structurally sound, and stable before installation with a minimum compressive strength of 3000 PSI. Ensure the substrate is clean, dry, and free of contaminants such as dust, residual adhesives, solvents, wax, oil, grease, mold, mildew, asphalt, and visible alkaline salts before installation to ensure proper adhesion and long-term performance. Do not proceed with installation if the concrete is visibly wet or if hydrostatic pressure is present or suspected, or if a chemical adhesive remover has been used, stop and contact the technical department for guidance.

Clean dormant construction joints and cracks wider than 1/4 inch of debris, dust, and dirt. Fill these cracks with a rigid crack treatment designed for construction joints, ensuring the surface is troweled flush with the surrounding concrete. Use a leveler or floor patch if appropriate. Use an appropriate expansion joint covering system over all expansion joints to manage concrete expansion and contraction.

Concrete Moisture Requirements: All concrete subfloors must be tested for moisture, following the *ASTM F2659 Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and Other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter*. The selected meter must be capable of measuring the concrete moisture content (MC%) up to a maximum of 6.9, with a maximum allowable moisture content being 4.5%. Concrete slabs that are in direct contact with ground shall have a vapor retarder installed directly beneath the slab that is compliant with the *ASTM E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs*.

When concrete substrates do not meet the above requirements, test for surface absorbency (porosity) following the *ASTM F3191 Standard Practice for Field Determination of Substrate Water Absorption for Substrates to Receive Resilient Flooring*. Water droplet(s) placed on the surface must be absorbed into the concrete within 20-minutes for the surface to be considered absorbent or porous. If required, the concrete can be made porous by mechanical methods, such as diamond grinding, sanding with a DiamaBrush buffer attachment, shotblasting or similar. Concrete can also be made porous through acid etching, carefully following the manufacturer's instructions. Ensure acid etched concrete is rinsed with clean water, then cleaned with a wet-vacuum, at least twice.

Alternatively, use a surface-applied moisture mitigation system, following the manufacturer's instructions. The mitigation system must have a permeability value of ≤ 0.1 grains/sq. ft./hr. when tested in accordance with the *ASTM E96 / E96M Standard Test Methods for Water Vapor Transmission of Materials (Method B)*, Confirm compliance with the manufacturer before use.

Gypsum/Lightweight Substrate Requirements: Lightweight or

gypsum substrates must be dry per the product manufacturer's specifications and have a minimum compressive strength of 2000 PSI when installed over wood or 3000 PSI when installed over concrete. Lightweight or gypsum substrates must be installed and prepared in accordance with the *ASTM F2471 Standard Practice for Installation of Thick Poured Lightweight Cellular Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring* or the *ASTM F2419 Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring*. New or existing substrates may require a sealant or primer before installing resilient flooring. Follow the product manufacturer's instructions for appropriate preparation. Substrates must be firmly bonded to a structurally sound Substrate. Any cracked or damaged areas must be removed and repaired using a compatible repair product.

Wood Substrate & Subfloors Requirements: All wood substrates must be structurally sound, stable, and free from deflection, movement, or instability. Sleepers and sleeper systems must not make direct contact with concrete subfloors. The moisture content percentage (MC-%) of the wood must also meet the requirements for the specific region to ensure proper performance and durability. Wood subfloors and substrates should be compliant with and, if necessary, prepared in accordance with *ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring*. Wood substrates are recommended to be of double layer construction, with a total thickness of 1 in. or more, in accordance with ASTM standards, APA guidelines and sound control best practices. If necessary, install an underlayment grade plywood with a minimum thickness of 1/4-in. on the surface in the opposite direction to the substrate, following *ASTM F1482*.

Resinous Coating Requirements: When installing directly over a resinous coating, such as an epoxy coating or a moisture mitigation system, ensure the coating is clean and free of contaminants, structurally sound, smooth, dry and cured for the prescribed length of time.

Metal Subfloor Requirements: Metal substrates must be clean, dry, structurally sound smooth and free of oil, rust and/or oxidation. When installing in areas that may be subject to topical water, moisture and/or high humidity, an anti-corrosive coating should be applied to protect the metal substrate. Contact a local paint or coating supplier for coating recommendations.

Other Subfloor & Substrates: Installing over existing resilient vinyl flooring is not recommended. However, it may be possible over some materials, such as VAT, VCT, quartz tile, solid vinyl tile, sheet vinyl or linoleum, as well as existing hard surface flooring substrates, such as terrazzo, porcelain or ceramic tile. Ensure Substrate is dry, existing flooring is a single layer and is clean, dry, sound, solid and well adhered. All loose material must be removed and repaired or replaced. All grout lines and wide seams greater than 1/4" in width and/or depth, as well as any significant

substrate imperfections, must be filled and troweled flush with a suitable cementitious patch. Electing to install over any existing floor covering releases the manufacturer from any responsibility regarding the suitability and continued performance of that product, including any resulting effect on the new floor covering.

Radiant Heating Requirements: When installing flooring over a substrate that contains a radiant heating system, ensure that none of the heating elements make direct contact with the flooring material. Ensure radiant heat is no higher than 70° F (21° C) 8 hours prior to and during the entire installation. After installation, the radiant heat may gradually be increased over the course of 24 hours, until normal operating temperature is reached. Ensure the temperature of the radiant heating system does not exceed 85° F (29.5° C) and avoid making abrupt changes in radiant heating temperature.

Sound Control Substrates: Additional sound control underlayments cannot be used under this flooring. Any and all issues related to the installation of additional, unapproved underlayments will not be covered under warranty.

Unsuitable Substrates: These include, but are not limited to: Floating or loose floor coverings, hardwood, carpet, cushioned vinyl, rubber, cork, foam, asphalt tile, additional acoustical underlayments and any substrate with visible mold, mildew, or fungi and any substrate in wet areas, such as inside showers and saunas. Do not install over substrates that have been coated with a varnish or an oil-based, enamel, paint, primer, primer-sealer or stain-blocker. Do not install over any substrates made of Masonite™, chipboard, wafer board, fiberboard, particleboard, construction-grade plywood, CDX, OSB (including AdvanTech™), Lauan, cement board or any non-underlayment grade panels – if present, cover with an APA-rated underlayment-grade plywood. Do not use pressure-treated plywood. If using fire-retardant plywood, confirm adhesion using the Mat Bond Evaluation detailed below. Do not install directly over any adhesive or adhesive residue of any kind or in recreation vehicles, campers or boats.

Note: Issues related to unsuitable substrates or subfloors are not covered under warranty.

Adhesive Mat Bond Evaluation: If the compatibility of an otherwise suitable substrate or adhesive is in question, perform a mat bond test following the *ASTM F3311 Standard Practice for Evaluation of Performance and Compatibility for Resilient Flooring System Components* prior to installation.

Flooring Expansion

Expansion Gap: Expansion gaps are required around the entire perimeter of the flooring and between the flooring and all adjacent vertical surfaces, such as adjacent flooring, fixed furniture, thresholds, fixtures, door jambs, and other protrusions - this allows the flooring area to freely expand and contract naturally. Do not adhere or anchor any accessories directly to or through

the flooring material, as this could restrict natural movement resulting in an installation failure. The required expansion gap depends on the installation area, per the following:

- Areas that are ≤ 50 feet in length and/or width must have a ≥ 1/4-in. expansion gap.
- Areas that are 50-85 feet in length and/or width must have a ≥ 1/2-in. expansion gap.
- Three season rooms, sunrooms and other areas that will not have continuous HVAC control must have a ≥ 1/2-in. expansion gap.
- Hotel rooms that may undergo high-heat pest control must have ≥ 1/2-in. expansion gap.
- Areas with very heavy furniture ≥ 800-lb. (363-kg) must be isolated with a compatible t-molding and have ≥ 1/2-in. expansion gap.

Expansion Joint: When the total flooring length or width exceeds 85 feet, a compatible t-molding must be installed to create an expansion joint. Expansion joints must be wide enough to accommodate an appropriate accessory and allow for the appropriate expansion gap on either side. Accessories must cover the flooring material by at least 1/8-in. on each side and must be glued or anchored directly to the substrate.

Three season rooms, sunrooms and other areas that will not have continuous HVAC control must be ≤ 30 feet in length and/or width and must be isolated from other areas with a compatible T-molding, to ensure that flooring does not run room to room.

Flooring Installation

Site Conditions & Acclimation: The flooring does not require an acclimation period, provided it is stored in accordance with the Storage guidelines. The prepared installation area must be fully enclosed and weather-tight. During the installation, any direct sunlight should be blocked using window treatments or other protection. The ambient temperature during installation must be controlled and > 60°F (16°C), with a recommended maximum of 80°F (27°C). The ambient relative humidity must be between 35% and 65%, and the temperature must be ≥ 10°F above dew point. A wireless, cloud-based monitoring system is recommended to track and record site conditions, especially when the site is unoccupied.

Note: When installing at temperatures > 80°F (27°C), the width of the expansion gap may increase as the flooring temperature decreases.

Installation Preparation: All wall-base should be removed before flooring installation, unless a quarter round molding (fixed to the wall or wall-base only) will be installed. Undercut all wooden door jambs and the first inch of any remaining wall-base (which will be covered with molding) with an Oscillating Multi-Tool. The undercut height must be the thickness of the floor covering plus 1/64- in., which will allow the floor covering

to expand and contract naturally. Steel door jambs should be pattern-scribed, leaving the required expansion gap. When pattern-scribing, use a color-coordinated 100% silicone to fill the expansion gap. Clean the entire area to be installed using a HEPA- filtered vacuum.

Inspect all material prior to and during installation to verify that there are no visible defects, damage, excessive shading, sheen or texture variations. Blend materials from several cartons within the same lot to ensure a consistent appearance. Some flooring products, colors and textures have latent and acceptable color and shade variations. If there are concerns regarding defects, shade, sheen or texture variation, do not install material and consult a sales or technical representative. **Labor and associated costs with materials installed with obvious visual defects is not covered under warranty.**

Layout: Confirm the installation pattern and direction according to design specifications or the work order. Planks should be installed in a random pattern, ensuring plank end joints are spaced at least 8 inches apart. It is recommended to avoid "H" joints and "stair-stepped" patterns, ensuring no obvious pattern repeats. Failure to randomize plank end joints could weaken the integrity of the locking mechanism, which may lead to failure. Tiles must be installed in a brick-bond or 1/3rd off-set pattern.

Starting Line: Determine the best wall to start the installation along – typically, this is the longest straight wall with a doorway. Measure the width of both ends of the room and, accounting for the necessary expansion gaps, calculate the width of the last row. If it is less than half the width of the floor covering or if a balanced design is required, reduce the width of the first row accordingly. Use a chalk-line to mark the outside edge of the first row on the substrate.

If needed, trim the first row by removing the side without the extended locking mechanism (tongue) to fit, accounting for the expansion gap. To trim the first row, either measure and mark your cut lines or use the mirror-scribe method. To mirror-scribe, place your selected piece on the opposite side of the chalk-line, so that the chalk-line is above the extended locking mechanism (groove). Then, place a full piece flush with the wall, overlapping your selected piece. Using the overlapped piece as your guide, mark a cut line on your selected piece with a pencil/cut line. Once marked, proceed with trimming the first row as detailed below.

Cutting: Snap the piece downwards and, if necessary, trim the attached underlayment from underneath. For complicated cuts, such as around fixtures or door jambs, use a jigsaw with a carbide blade, following the tool's safety instructions.

First Row (angle): At the left corner of the starting wall, position the first piece so that either the pre-cut side or the side without the extended locking mechanism (tongue) is flush with the wall. Place wedge spacers between the floor covering and the wall to maintain the required expansion gap. Insert the second pre-cut

piece into the previous row at a ~25° angle and lay flat, ensuring the joint is properly seated. Repeat this process to complete the first row. For the last piece, measure, mark and cut, accounting for the required expansion gap. Keeping the installation straight is critical - check the first row using the chalk line, adjust and reinforce the entire row with wedge spacers as needed to straighten and firm up the row. The acceptable straightness tolerance is within 1/16-in. for > 20-ft. lengths or 1/32 -in. for < 20-ft. lengths.

Angle Tap Method - Subsequent Rows: Starting at the left corner, place a wedge spacer to maintain the expansion gap. Using a cut piece to keep the layout random, push the tongue of the long side into the groove of the previous row at a ~25° angle, slide into position and lower while ensuring it is properly seated.

Install the next piece by angling the tongue of the long side into the previous row at a ~25° angle and push the piece into the adjacent groove until properly seated. The tongue of the short side should slightly overlap the groove of the previously installed piece. Use a 2-lb. (~ 32-oz.) soft faced dead blow hammer (preferred) or rubber mallet and a ~6-in. piece of scrap flooring, seated in the locking mechanism of other end, and lightly tap towards the previously installed piece until the locking mechanism is fully engaged. Complete the following rows using this method, using a pull bar on the last row as needed.

Angle-Angle Method - Subsequent Rows: First, complete five or six rows using the Angle Tap method. Starting at the left corner, typically with a cut piece, insert the tongue of the long side into the previous row at a ~25° angle and push the piece into the adjacent groove until properly seated. Maintain the required expansion gap with wedge spacers as needed. Install the next piece by angling the tongue of the short side into the groove of the previous short side. The tongue of the long side should slightly overlap the groove of the adjacent row. With the short side properly seated, lift the piece slightly and push into the side of the adjacent groove until properly seated and locked into place. If necessary, use a 2-lb. (~ 32-oz.) soft faced dead blow hammer (preferred) or rubber mallet and a ~6-in. piece of scrap floor covering, seated in the locking mechanism, to lightly tap and fully engage the locking mechanism. Use a pull bar to close any open joints for the last piece of each row. Complete the following rows using this method, using a pull bar on the last row as needed.

Flooring Removal: If you need to replace a piece or disengage the end joints for any reason, first unlock the side joints of the entire row by raising the outside edge of the row by ~25°, then disconnect the row from the installation. Once the row is removed, remove one piece at a time by angling upwards and separating (opposite of the installation method).

Additional Installation Tips: Do not hit any part of the locking mechanism directly with any hammer, tapping block or pull bar unless it is the last row - doing so will damage the locking

mechanism and may result in peaking, gapping and joint separation. If you need to tighten gaps in the installation, use a ~6-in. piece of scrap floor covering, seated in the locking mechanism, and lightly tap to close any joints.

If you need to install small pieces that are < 3-in. in length or width, place a thin bead of Liquid super glue on the previously installed locking mechanism just before installing. This will ensure the joints remain locked together during use. Do not get the adhesive on the surface, be prepared and if required, immediately remove adhesive using isopropyl alcohol with a clean white cloth - super glue coverage should be ~30 feet per oz.

After the first five or six rows are completed, turn around so that you are working on top of the installed material. This will allow the side joints to be pulled together rather than pushed, which will make the installation easier.

Post-Installation: Visually inspect the installation to ensure that the appearance is uniform and straight, that the locking mechanisms are fully engaged, that all seams are tight and correctly staggered/spaced, and that the expansion gap is the correct width. Fill any perimeter gaps that will not be covered by an accessory with a color-coordinated 100% silicone caulk. When spot cleaning, do not apply abrasive or solvent-based cleaners directly to the surface of the floor covering. When covering perimeter gaps with an accessory (wall base, molding, thresholds, T-molding, etc.), ensure the accessory overlaps the flooring material by at least 1/8 inch. All accessories must be glued or anchored directly to the substrate or vertical surface. Take photographs and have any required documentation signed and filed following completion. *ave three or more extra pieces of material in the original packaging as attic stock for the lifetime of the floor. **In the unlikely event of a product issue, attic stock can play a crucial role in product identification, color matching, product claim verification and possible repairs.***

Flooring Protection

Do not slide or drag heavy objects across the floor. When moving appliances, heavy furniture or equipment, protect the flooring with appropriate, hard surface furniture sliders or 1/2" plywood.

All furniture casters or glides must be intended for resilient flooring and made of a soft material, such as a felt, silicone or a poly-based material. Casters and glides must have a flat contact point that is at least 1 sq. in. or 1.125 in. in diameter to limit indentation and flooring or finish damage. All rolling seating in desk areas must have chairs that use soft, polyurethane wheels and have a polycarbonate resilient flooring chair pad installed over the finished floor to protect it. **To avoid maintenance-related issues, do not use nylon/hard plastic wheels, glides or casters.**

All fixed furniture legs or corners must have permanent floor protectors installed on all contact points to reduce indentation, wear, scratching and other flooring or finish damage. Floor

protectors must be intended for resilient flooring and made of a soft material (such as a felt, silicone or a poly-based material). Floor protectors must have a flat contact point of at least 1 sq. in. or 1.125 in. diameter and must cover the entire bottom surface of the furniture leg. **Do not use nylon/hard plastic floor protectors or furniture feet.**

Ensure all furniture castors and chair legs are clean and free of all dirt and debris. Routinely clean chair castors and furniture legs to ensure that dirt or debris has not built up or become embedded in castors or floor protectors. Replace chair castors and floor protectors at regular intervals, especially if they become damaged or heavily soiled. Felt floor protection devices may need to be replaced 3 or more times a year to prevent accumulation. Use an effective walk-off mat or system at all outdoor entrances/exits and prevent water from accumulating. Ensure mats are manufactured with non-staining backs to prevent discoloration.