

## INSTALLATION GUIDELINES

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# Lorington LVT Collection

### GENERAL INFORMATION

Contact Mannington Commercial Technical Services for questions or guidance about subfloor testing and installation recommendations. Technical Services can be reached Monday to Friday, 8:00 a.m. to 5:00 p.m. EST at 800.241.2262 ext 3. These instructions cover general guidelines for all fully adhered installations of the Mannington Commercial's Lorington LVT Collection. All recommendations are based on the most recent available information. For more complete details, consult Mannington Commercial's General Installation Guide or visit our website at [manningtoncommercial.com](http://manningtoncommercial.com). These instructions and recommendations must be followed for a satisfactory installation.

The installation of Lorington LVT is straightforward and similar to the installation procedures that apply to all quality resilient floors. Good preparation is essential for a trouble-free installation. Do not install Lorington until job-site testing and subfloor preparations are finished and the work of all other trades is complete. Site conditions must comply with the relevant building codes and local, state and national regulations.

- Lorington LVT is recommended for use over properly prepared concrete, suspended wood, metal and other suitable substrates. Never install LVT over residual asphalt type (Cutback) adhesive as Bleed-Through may occur.
- Never install Lorington LVT over additional padding or crumb rubber. These are not acceptable and are unsuitable as a substrate for installation. Lorington must be direct glued to the subfloor.
- Mannington Commercial requires the flooring product to be inspected prior to installation for proper style, color, order quantity and potential defects. Installation of flooring acknowledges acceptance of material.
- Mannington Commercial does not recommend mixing dye lots. Predetermined and approved natural breaking points such as doorways or in areas where dye lot changes would be less noticeable and out of the main focus areas. Always get prior approval and sign off from the owner before proceeding. Mannington Commercial does not warranty the visual aesthetics where mixed dye lots are merged.



- Lorington LVT is not suitable for external installation or unheated locations.
- Lorington LVT flooring, adhesive, job-site and subfloor must be acclimated to a stable condition before installation. (See Job-site Testing).
- Following installation, Lorington LVT foot traffic should be minimized for 24 hours; point loads and rolling traffic should be minimized for 48 hours and utilize minimal wet cleaning for 5 days (except XpressStep).
- Lorington LVT flooring should remain at a temperature between 55°-85°F (13°-29°C) during its service life.
- Adhesive types can have a significantly different moisture tolerance which can influence required subfloor prep as well as install time.
- Not recommended for heavy rolling loads that exceed 250 psi..
- Not recommended for installation in direct sunlight or wet areas such as bathrooms.

### **MATERIAL RECEIVING, HANDLING & STORAGE**

1. All floor covering products require care during storage and handling. It is important to store flooring products in a dry, temperature-controlled interior area.
2. The temperature range should be between 55°-100°F, and the relative humidity should be controlled and maintained between 30-70%.
3. Material must be conditioned for a minimum of 48 hours before beginning the installation.
4. Flooring materials that are shipped in cartons must also be stored properly. Cartons must be kept squarely positioned on the pallet to prevent distortion of the contents and to be fully supported. Do not store close to exterior walls, in direct sunlight or near HVAC vents.
5. Stored cartons are to be protected from forklift and other traffic that can damage carton corners. Never double stack pallets of flooring products.
6. Immediately remove all shrink wrapping and verify materials delivered are correct style, color, and quantity.
7. Report discrepancies immediately to Mannington Commercial at 800.241.2262 ext 2 (Claims), as installation of products installed with visual defects, mixed production runs or incorrect style will not be honored.

### **JOBSITE TESTING**

1. Before job-site testing, the building envelope must be sealed (walls, roofing, windows, doorways, etc., installed)
2. The installation area and materials to be installed shall be maintained at a minimum of 65°F (18.3°C) and a maximum of 85°F (29.4°C) for 48 hours before, during, and for 48 hours after completion of the installation
3. Relative humidity level extremes should also be avoided. General recommended humidity control level is between 30-60%. If a system other than the permanent HVAC source is utilized, it must provide proper control of both temperature and humidity to recommended or specific levels for the appropriate time duration.
4. Test sites must be properly prepared and protected for the duration of testing to achieve valid results.

5. Surface flatness for all subfloors: The surface shall be flat to 3/16" (3.9mm) in 10 ft. (3,050 mm) and 1/32" (0.8 mm) in 1 ft. (305 mm). To check flatness, place a 10-ft straight edge, string, laser level or use another suitable method on the surface, and measure the gap.
6. Concrete subfloors:
  - **Concrete subfloors must be finished, cured, and free of all sealers, coatings, finishes, dirt, film-forming curing compounds or other substances that may prevent proper bonding of the flooring materials (ACI 302.1 and ASTM F710).**
  - Randomly check concrete subfloor for porosity using the drop water test per ASTM F3191. Place a 1"-diameter drop of water directly onto the concrete subfloor. If the water droplet does not dissipate within 90 seconds, the subfloor is considered non-porous.
  - Concrete subfloors must have a minimum compressive strength of 3,000 psi.
  - **Moisture testing:** Perform either the **preferred** In-situ Relative Humidity (RH) Test (ASTM F2170) or the acceptable Moisture Vapor Emission Rate (MVER) Test (ASTM F1869) as needed. For acceptable moisture limits please refer to the specifications of the adhesive of choice. Alkalinity: You must test surface alkalinity (pH) as per ASTM F710. A 7.0-9.20 pH is acceptable.
7. Wood subfloors and underlayment panels shall have the moisture content tested using a suitable wood pin meter. Readings between the wood subfloor and underlayment should be within 3% and have a maximum moisture content of 14% or less.

## MOISTURE SUPPRESSANT SYSTEM

Concrete subfloors that exceed adhesive specifications will require a Moisture Suppressant System. Due to complexities associated with moisture vapor transmission, emissions and movement of soluble salts (alkalinity) in concrete subfloors. We do not offer, recommend or warranty a specific solution for excess moisture in concrete slabs. However, there are many companies that offer solutions with warranties for excess moisture in concrete slabs.

Mannington Commercial suggests that you reference the current ASTM F710, "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring," ASTM F3010, "Standard Practice for Two Component Resin Based Membrane Forming Moisture Mitigation Systems for Use Under Resilient Flooring Systems," and ASTM F3513 "Standard Practice for Single Component, Fluid-Applied Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings." Contact one or more of the following or other moisture suppressant system suppliers for assistance:

- Ardex (724) 203-5000 [www.ardex.com](http://www.ardex.com)
- Koster American Corp. (7S7) 425-1206 [www.kosterusa.com](http://www.kosterusa.com)
- Mapei (800) 426-2734 [www.mapei.com](http://www.mapei.com)
- Uzin (800) 505-4810 [www.us.uzin.com](http://www.us.uzin.com)
- Schonox (855) 391-2649 [www.hpsubfloors.com](http://www.hpsubfloors.com)

## SUBFLOOR PREPARATION

Careful subfloor preparation is vital for an excellent floor appearance and good tile/plank adhesion. The subfloor must be smooth, firm, flat, clean, dry, free from defects and fit for purpose. A suitable smoothing compound should be used to ensure that no irregularities show through to the surface of the finished floor. In all cases, the subfloor must meet the moisture and pH requirements before installation. For a porous subfloor (concrete or wood) that has high pH and/or needs a primer, use Mannington Commercial Universal Primer.

Mannington Commercial Universal Floor Primer/pH Blocker is an acrylic latex solution made to neutralize excess alkali and is also recommended as a primer to prevent over absorption of adhesive to ensure a better bond. Gypsum topped or patched areas must receive a full application of Mannington Commercial Universal Floor Primer, as well as any subfloor that is porous, gritty, chalky, or dusty. Porous subfloors with chemical pH above 9 may require a second application. Mannington Commercial Universal Floor Primer can be applied by pouring directly on the subfloor and spreading evenly with a broom or paint roller. Primer can also be applied with a garden sprayer, airless rig, or similar spray equipment. Allow the primer to dry completely prior to second application or before applying adhesive. Primer is dry if there is no transfer when touched. Coverage is approximately 350-400 square feet per gallon.

### Concrete Subfloors:

1. Below and on-grade concrete subfloors must have a suitable vapor retarder properly installed directly beneath the slab. Always follow manufacturer's written recommendations for the use and installation of their appropriate surface preparation materials. New concrete subfloors should be allowed to cure a minimum of 6 weeks (45 days).
2. Record and file site conditions, test results and any corrective action(s) taken. It is important to maintain this documentation throughout the warranty period.
3. Subfloor must be clean (free of dirt, sealers, curing, hardening or parting compounds or any substance that may stain or prevent adhesion), smooth, flat, sound, fit for purpose and free of movement excessive moisture and high alkalinity.
4. All marking paint, permanent markers, crayon, (purple) plumbing primer, and any other potential stainants must be removed by grinding the surface before installing the flooring, nor should the back of the flooring ever be marked to prevent "bleed through".
5. Slick surfaces such as power-troweled concrete shall be rendered porous to allow for a mechanical bond between the adhesive and subfloor  
**WARNING: ASBESTOS & SILICA - Refer to the current Resilient Floor Covering Institute (RFCI) document "Recommended Work Practices for Removal of Existing Resilient Floor Coverings" for guidance [www.RFCI.com](http://www.RFCI.com)).**
6. Remove existing resilient floor covering; remove all residual adhesive, paint or other contaminants following RFCI recommended work practice. The use of adhesive removers or solvents in the abatement or removal of existing or old adhesives is prohibited and may void any warranty.
7. Perform corrective actions necessary for elevated moisture or high alkalinity conditions.
8. Surface flatness for all subfloors: The surface shall be flat to 3/16" (3.9 mm) in 10 ft. (3050 mm) and 1/32" (0.8 mm) in 1 ft (305 mm). Bring high spots level by sanding, grinding, etc., and fill low spots. Smooth surface to prevent any irregularities or roughness from telegraphing through the new flooring.

9. Leveling and patching: For concrete subfloors, use only high-quality Portland cement-based materials (minimum 3000 psi compressive strength according to ASTM C109 or ACI 1318). Mix with water only; do not use latex.
10. Caution: Do not lightly skim coat highly polished or slick power-troweled concrete surfaces. A thin film of floor patch will not bond to a slick subfloor and may become a bond breaker, causing flooring to release at the interface of the subfloor and patching material. If in doubt, perform a bond test prior to commencing with the installation.

### **Wood Subfloors:**

1. Wood subfloors require an underlayment (double layer construction) with a minimum total thickness of 1" (25 mm). Use minimum 1/4" (6 mm) thick APA rated "underlayment grade" plywood with a fully sanded face, or other underlayment panel that is appropriate for the intended usage. Install and prepare panels and seams according to the manufacturer's instructions. Also refer to ASTM F1482. "Standard Practice for Installation and Preparation of Panel Underlayments to Receive Resilient Flooring."
2. Many times wood panel subfloors are damaged during the construction process or are not underlayment grade. These panels must be covered with an appropriate underlayment. Underlayment panels are intended to be used to provide a smooth surface on which to adhere the finished floor covering. It should be understood that underlayment panels cannot correct structural deficiencies.
3. Panels intended to be used as underlayment should be specifically designed for this purpose. These panels should have a minimum thickness of 1/4" (6 mm). Any panels selected as an underlayment must meet the following criteria:
  - Be dimensionally stable
  - Have a smooth, fully sanded face so graining or texture will not telegraph through
  - Be resistant to both static and impact indentation
  - Be free of any surface components that may cause staining such as plastic fillers, marking inks, sealers, etc.
  - Be of uniform density, porosity and thickness
  - Have a written warranty for suitability and performance from the panel manufacturer or have a history of proven performance
4. Any unevenness at the joints between panels must be sanded to a level surface. Gaps between panels, hammer indentations, and all other surface irregularities must be filled and sanded.
5. Particleboard, chipboard, construction grade plywood, any hardboard and flake-board are not recommended as underlayment. All have inadequate uniformity, poor dimensional stability, and variable surface porosity. Mannington Commercial will not accept responsibility for adhered installation over these subfloors. If the surface of the subfloor is not smooth, a 1/4" underlayment should be installed over the subfloor. In all cases, the underlayment manufacturer or underlayment installer is responsible for any underlayment warranties.

## Existing Floor Coverings:

To achieve maximum product performance, it is always best to remove existing floor covering and prepare the substrate before installing new products in commercial settings. In the case where removal of the existing floor covering is not an option, the existing flooring must be covered with Portland Based Embossing leveler or other appropriate porous underlayment. Existing flooring can adversely affect the performance properties of the new flooring, such as indentation or adhesive bond. If you choose to install over an existing floor, please refer to the existing floor covering section of our Mannington Commercial General Installation Guide for a list of things to consider.

NOTE: If the flooring contractor elects to install new floor covering over an existing floor covering, the flooring contractor assumes all responsibility as to the suitability and continued performance of the existing floor covering. Mannington Commercial General Installation Guide.

## INSTALLATION PROCEDURE

Before starting the Mannington Commercial LVT installation, ensure the following are satisfactorily completed::

1. **Acclimation:** The installation and materials to be installed shall be maintained at a minimum of 65°F (18.3°C) and a maximum of 85°F (29°C) for 48 hours before, during and for 48 hours after completion of the installation, and continue to maintain the flooring at a temperature between 55°F - 85°F during its service life.
2. **Relative humidity level extremes** should also be avoided. General recommended humidity control level is between 30-60%. If a system other than the permanent HVAC source is utilized, it must provide proper control of both temperature and humidity to recommended or specific levels for the appropriate time duration.
3. **Sequence:** The most uniform installation will be obtained by sequencing the pallet numbers in the order they were manufactured starting with the lowest number and progress to higher numbers. Each pallet should have tile cartons with a similar range of numbers.
4. **Flooring materials:** Check that the quantity of Mannington Commercial LVT and adhesive are sufficient for area to be installed. Check material for visual defects before installation. Installation of flooring acknowledges acceptance of materials. Report discrepancies immediately to Mannington Commercial at 800.241.2262 ext. 2 (Claims), as installation of products installed with visual defects, mixed production runs or incorrect style will not be honored.
5. **Expansion joints, isolation joints or other moving joints** are incorporated into concrete floor slabs in order to permit movement without causing random cracks in the concrete. These joints must be honored and not filled with underlayment products or other materials, and floor coverings must not be laid over them. Expansion joint covering systems should be detailed by the architect or engineer based upon intended usage and aesthetic considerations.
6. **Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities** shall be filled or smoothed with high quality Portland cement-based patching or underlayment compound for filling or smoothing or both. Patching or underlayment compound shall be moisture, mildew, and alkali-resistant, and shall provide a minimum of 3500 psi compressive strength after 28 days, when tested in accordance with ASTM C109 or ASTM C472, whichever is appropriate.

7. Subfloor preparation: Make sure all surfaces to be covered are completely clean, dry and smooth and that a necessary subfloor preparation has been properly completed and documented.
8. Inspect substrate: Perform final acceptance inspection of substrate.
9. Adjacent surfaces protection: Protect adjacent work areas and finish surfaces from damage during product installation.
10. Flooring protection: Mannington Commercial LVT should be the last material installed to prevent other trades from disrupting the installation and adhesive set-up or damaging the floor.

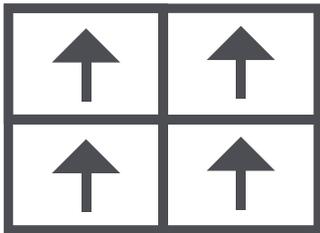
**Start of flooring installation indicates acceptance of current subfloor conditions and full responsibility for completed work.**

**Layout**

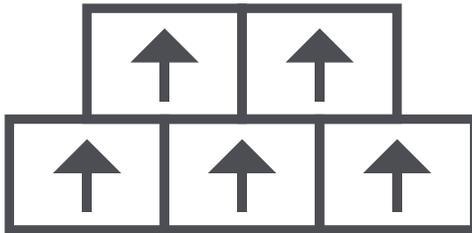
Installation methods are at owner’s discretion. Mannington will not be responsible for what is visually acceptable to the end user. Some installation patterns such as herringbone are difficult to align and may not be acceptable. Lorington LVT comes in plank and tile formats. All products have arrows imprinted on the back. Lay all arrows pointing in the same direction. Lorington LVT can be laid out to run either parallel or diagonal to the room or primary wall.

- Tiles can be installed block or staggered, all arrows in the same direction. When tiles are installed quarter turned, arrows should alternate

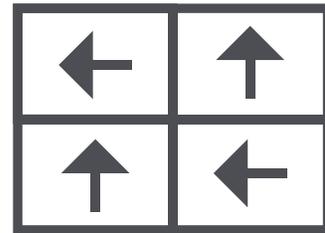
**Tiles: Blocked/Monolithic**



**Staggered/Ashlar**

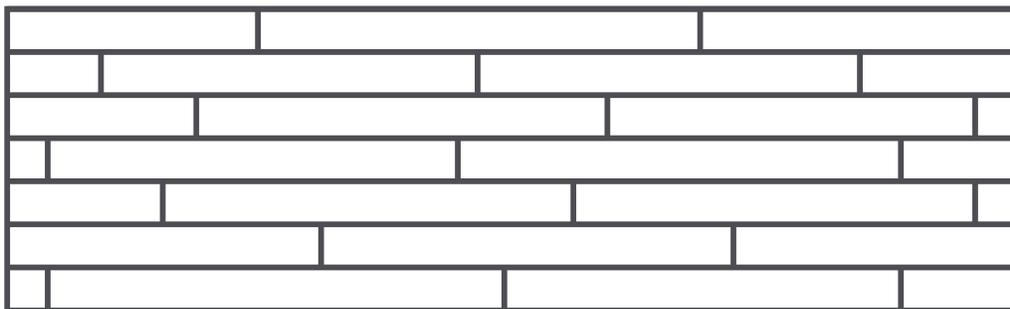


**Quarter Turn**

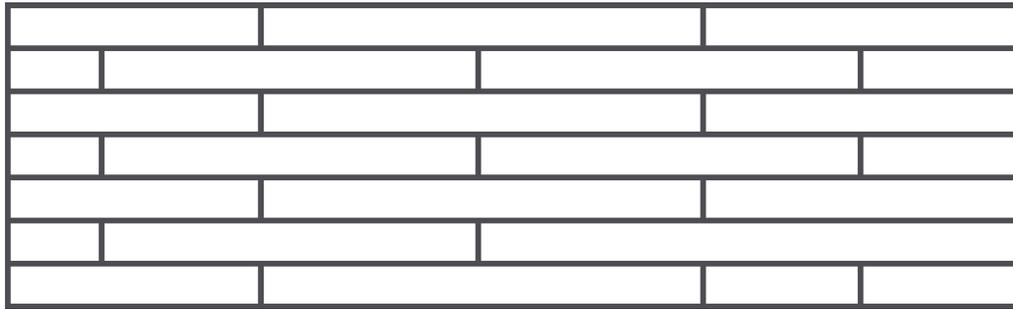


- Plank flooring should have end joints offset by at least 6" and staggered to create a random appearance that avoids alignment of end joints. All arrows should point in the same direction.

**Planks: Staggered**



**Correct Method**



**Incorrect Method**

The following conditions must be given consideration when determining how Lorington LVT will be installed:

1. The layout shall be specified by end user, architect or designer.
2. Establish center marks and determine start point to balance installation in room and have equal tile widths on opposite sides of room. This can be facilitated by dry-laying tiles and marking base lines.
3. The room layout must be set up so that all flooring can be installed while staying off freshly installed tiles. This will minimize tile shifting, adhesive displacement and wet adhesive from oozing up and getting onto the face of the tiles. This can be accomplished by creating work zones outlined with chalk lines to spread adhesive aligned with established base lines. Create work zones that are no wider than the installers' comfortable arm reach and in multiples of the tile width.
4. All installations: Spread only the amount of adhesive that can be covered within the working time specific to the adhesive being used.

When all preparatory work is satisfactorily completed, including dry-fitting cut tiles (if applicable), proceed with installation. Inspect each tile for visual defects before installing. Installation of the flooring implies acceptance of materials.

## ADHESIVES

Mannington Commercial adhesives are specifically formulated to be fully compatible with our product chemistry and to maximize the performance of Mannington Commercial products. Using substitutes or failing to use Mannington Commercial adhesives as recommended can cut short product life and cause installation failure. Refer to the adhesive specification and/or label for additional details.

Mannington Commercial recommends the following adhesives for the installation of Lorington LVT. Only these adhesives should be used. Other adhesives may not provide adequate performance and could result in a failure.

1. V-88 Transitional Adhesive: For slabs that meet ASTM F710 requirements including the presence of an intact moisture vapor retarder per ASTM E1745 (Class B Minimum), is in direct contact with the concrete slab, no standing water, no free liquids present. No evidence of moisture staining, and no hydrostatic pressure, limits are in-situ relative humidity (maximum RH 99% per ASTM F2170). PH testing is required with a limit of 12. For all other conditions or when the above requirements are not met V-88 limits are in-situ relative humidity (maximum RH 95% per ASTM F2170) and/or moisture emissions (maximum 10 lbs./1,000 SF/24 hrs. per ASTM F-1869). Concrete must have a 12pH (ASTM F710). V-88 can

be used to install LVT over porous and non-porous substrates using a 1/16" x 1/32" x 1/32" U-notched trowel, spread rate up to 250 sq. ft. per gallon. For porous substrates, V-88 can be used as a wet set or semi-wet set (tacky-valley dry, ridges cloudy). Non-porous substrates: V-88 should be applied semi-wet (tacky-valley dry, ridges cloudy). Alternative for porous substrates/more adhesive transfer use a 1/16" x 1/16" x 1/16" square notch trowel, spread rate up to 180 sq. ft. per gallon.

2. XpressStep Spray Adhesive: Water-based spray adhesive recommended for the installation of Mannington Commercial LVT over porous and non-porous subfloors. Moisture limits are 10 lbs. maximum MVER or 98% relative humidity with a pH maximum limit of 12. Spread rate approximately 150-185 sq. ft. per can. Mannington approves XpressStep under stationary point loads when properly installed and within PSI of 250 or less. These areas require double coverage application. XpressStep is not approved for abusive conditions such as areas subject to dragging force, direct sunlight or where topical moisture would be a concern.

Mannington Commercial will not assume responsibility for floor covering failure due to hydrostatic pressure or moisture vapor emission. The final responsibility for determining if the concrete is dry enough for installation of the flooring lies with the floor covering installer. The adhesives are not designed to be moisture resistant to accommodate the water of hydration contained in new slabs or initial mixing; they are not to be considered remedial solutions to concrete subfloors with a history of moisture problems.

**Important:** Temperature directly affects adhesive working and setting times. Warmer temperatures shorten working times and colder temperatures lengthen working times of adhesive. Follow instructions on container for proper application.

## FULL SPREAD INSTALLATION

Adhesive application: Follow the instructions on the adhesive labels.

1. Use a trowel with appropriate notch size. Do not use worn trowels (approximately 600 sq. ft. usage on concrete).
2. Spread adhesive evenly with proper trowel held at 60-degree angle, avoiding skips or voids and excessive adhesive application.
3. Only spread enough adhesive that can be covered within the adhesive working time.
4. Tiles/planks must be placed into adhesive as specified (follow label directions).
5. Install rows to chalk line making sure tiles/planks are precisely aligned with chalk line and adjacent tiles.
6. Randomly check tiles/planks for complete coverage of adhesive onto back of tile, especially near the end of each adhesive spread. If there is little or no adhesive transfer, or if the adhesive has flashed off or skinned over, adequate bonding may not be possible. Scrape the flashed-off adhesive from the floor and spread fresh adhesive.
7. If tiles/planks shift, use releasable blue painters tape diagonally over seams to keep tiles tight and aligned. Tape should be removed once flooring adheres to the adhesive or within 24 hours.
8. Wet-set application: Do not work on top of freshly installed flooring. This will minimize tile/plank shifting and adhesive displacement and prevent wet adhesive from oozing up and getting onto the surface of the new flooring.

9. The floor must be rolled in both directions using a 100-lb. 3-section roller. Roll floor as soon as conditions permit without the tiles/planks sliding or adhesive bleeding to the surface. Roll floor again, 90 degrees to the first direction, within 1 hour. Adhesives should provide 100% uniform adhesive transfer (no visible trowel ridges) onto the back of the tile/plank, and not cause adhesive to squeeze out between tiles/planks. Pressure Sensitive Adhesive will not transfer 100% to the backing of the tile/plank. Be sure not to exceed the 1½-hour working time.
10. Clean excess adhesive as you install, before it is allowed to dry. Use a soapy, clean, soft cloth to remove wet excess adhesive.
11. Clean up all debris as you work.
12. Wait 24 hours for normal foot traffic and 48 hours for point and rolling loads after installation.
13. During first five days, minimize heavy wet cleaning to allow adhesive to fully set.

## **SPECIAL CONSIDERATIONS**

1. Radiant heat: Mannington Commercial LVT can be installed over radiant heating (hydronic) systems. The maximum temperature of the subfloor surface must not exceed 85°F. Before installing flooring products over newly constructed radiant heating systems, operate the system at maximum capacity to force any residual moisture from the cementitious topping of the radiant heating system. The system must be switched off for a minimum of 48 hours before, during and 48 hours after flooring installation.
2. Lorington LVT is not recommended for direct sunlight.
3. Protecting new installations: New installations must be protected while the adhesive cures. Early foot traffic, point or rolling loads can cause adhesive displacement or breaking of the bond between the adhesive and the tile or substrate. For moving heavy loads over installed flooring, use runner boards e.g., Masonite or plywood to reduce the risk of indentation, gouging, shifting or movement of flooring.
4. Protective Coverings should be breathable, non slippery, capable of preventing debris and abuse from damaging the surface of the flooring installation. Any protective covering that has an adhesive or tacky back applied is not suitable.
5. Do not tape protective covering to the installed floor. In any instance where tape is applied to the flooring any claims regarding residue or removal will not be honored.
6. Use Walk-off mats labeled non-staining.

For more information, please contact Mannington Commercial Technical Services at 800.241.2262 ext. 3 or visit [manningtoncommercial.com](http://manningtoncommercial.com).