



INSTALLATION GUIDELINES

Mixed Monolith

GENERAL INFORMATION

Contact Mannington Commercial Technical Services for 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 are for Mixed Monolith Luxury Vinyl Plank and Tile (LVT). All recommendations are based on the most recent available information. The information on these sheets provides general guidelines. For complete details consult Mannington Commercial's General Installation Guide or visit our website at manningtoncommercial.com. These instructions and recommendations must be followed for a satisfactory installation.

The installation of Mannington Commercial 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 Mannington Commercial LVT 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.

- Mixed Monolith is recommended for use over properly prepared concrete, suspended wood, metal and other suitable substrates. Never install Mixed Monolith over residual asphalt type (Cutback) adhesive as "Bleed Through" may occur.
- Never install Mannington flooring over padding or crumb rubber. These are not acceptable and are unsuitable as a substrate for installation.
- Mixed Monolith is not suitable for external installation or unheated locations.
- Mannington Commercial flooring, adhesive, job-site and subfloor must be acclimated to a stable condition before installation. (See Job-site Testing).
- Following installation, Mannington Commercial 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).

- Mannington Commercial LVT should remain at a temperature between 55°-85°F (13°-29°C) during its service life.
- Mix and install product from several different cartons to achieve maximum variation.
- Arrows on the back of Mixed Monolith product are not for installation purposes. This product is non-directional.
- Adhesive types can have a significantly different moisture tolerance which can influence required subfloor prep as well as install time.

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 65°-100°F, and the relative humidity should be controlled and maintained between 30-70%.
3. Material must be conditioned for at least 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 doublestack pallets of flooring products.
6. Immediately remove all shrink wrapping before acclimation and verify materials delivered are correct style, color and quantity.
7. Report discrepancies immediately to Mannington 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.

JOB SITE SETTING

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 35–55%. 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. (3050 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).**

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- Randomly check concrete subfloor for porosity using the drop water test. Place a 1"-diameter drop of water directly onto the concrete subfloor. If the water droplet does not dissipate within 60 to 90 seconds, the subfloor is considered non-porous.
 - Concrete subfloors must have a minimum compressive strength of 3000 psi. Concrete subfloors shall not consist of lightweight concrete or gypsum.
 - **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). 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 - 9.20pH 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," and ASTM F3010, "Standard Practice for Two Component Resin Based Membrane Forming Moisture Mitigation Systems for Use Under Resilient Flooring Systems." Contact one or more of the following or other moisture suppressant system suppliers for assistance:

Ardex: 724.203.5000, www.ardex.com

Koester American Corp.: 757.425.1206, www.koesterusa.com

Mapei: 800.426.2734, www.mapei.com

Schonox: 855.391.2649, www.hpsubfloors.com

Uzin: 800.505.4810, www.ufloorsystems.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.

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. Slick surfaces such as power-troweled concrete shall be abraded or profiled to allow for a mechanical bond between the adhesive and subfloor.
5. 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.

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).

6. Perform corrective actions necessary for elevated moisture or high alkalinity conditions.
7. 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.
8. 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). Mix with water only; do not use latex. 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, OSB, flake-board and wafer board are not recommended as underlayments. All have inadequate uniformity, poor dimensional stability and variable surface porosity. Mannington Commercial will not accept responsibility for adhered installation over these subfloors. In all cases, the underlayment manufacturer or underlayment installer is responsible for all underlayment warranties.

Raised Access

Careful preparation is essential for proper floor appearance and installation. Ensure raised access panels are firm, level, smooth, clean, dry, and free from defects. Installation requirements must meet the following standards:

- Height differences between adjacent panels must not exceed 0.75 mm (0.029")
- Gaps between panels should not exceed 1 mm (0.039")
- Overall floor to be level within +/- 1.5 mm (0.059") over a 5 m (16') length

Unstable, uneven, or damaged panels should be suitably repaired or replaced prior to installation. If the panels are dished, we recommend a suitable slump-free smoothing compound, compatible with metal access panels is used. This may require priming of the panels. Tile joints should not coincide with the joints of the raised access panels – see figures 1 and 2 for advice on positioning of first tile. This will ensure no irregularities show through the surface of the finished floor and the tiles are adequately adhered.

LAYOUT (MIXED MONOLITH ONLY)

- Arrows on the back of Mixed Monolith are not for installation purposes.
- This product is non-directional.
- Tiles can be installed Block (Monolithic), Vertical Ashlar or Horizontal Brick Ashlar depending on the design and mix selected.
- The layout shall be specified by end user, architect, or designer.

NOTE: Edge has 3 random visuals. Poured and Scored are repetitive.

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

6. 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.

7. 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.
8. 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.

Figure 1 – Location of tiles, which must be offset from either edge of the raised access panels to prevent joints from overlapping.

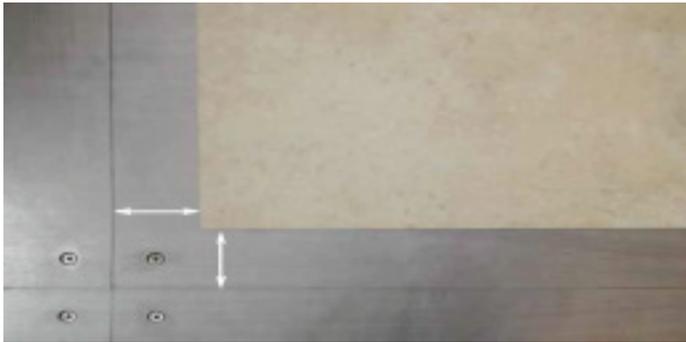
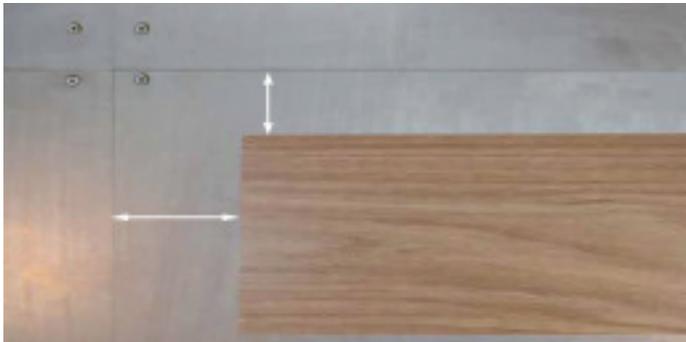


Figure 2 - Location of planks, which must be offset from either edge of the raised access panels to prevent joints from overlapping.



ADHESIVES

See adhesive specification sheet for moisture limits, spread rates and additional details

For releasable installation, use Amtico Tackifier with a 3/8" nap roller application.

- For permanent installation, use Amtico Tackifier with a 16" x 16" x 16" square notched trowel or 1" nap roller. XpressStep LVT Spray or Amtico PSA adhesive may also be used
- In areas where raised access floors are not being utilized, RP-18 can be used for full spread applications.

Note: Amtico RP-18 adhesive must be used under hospital beds and heavy rolling loads or where a high-performance adhesive is needed. Amtico RP-18 adhesive is required in areas with excessive heat, cold, exposure to sunlight or where topical water is a concern.

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 installation manual 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.

INSTALLATION PROCEDURE

Before starting the Mixed Monolith 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 (29.4°C) for 48 hours before, during and for 48 hours after completion of the installation.
2. Relative humidity level extremes should also be avoided. General recommended humidity control level is between 35-55%. 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. Continue to maintain the flooring at a temperature between 55°F - 85°F during its service life.
4. Flooring materials: Check that the quantity of Mixed Monolith 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. 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

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provide a minimum of 3500 psi compressive strength after 28 days, when tested in accordance with ASTM C109 or ASTM C472, whichever is appropriate.

6. Flooring protection: Mixed Monolith 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.

Installation Options

Mannington Commercial offers three options for the installation of Mixed Monolith:

- Full Spread
- Perimeter
- Loose Lay

Full Spread Option

1. This is the preferred method for optimal performance.
2. Before installation, make sure the subfloor is dry and dust free.
3. Allow the adhesive to dry until there is no adhesive transfer when lightly touched (10-20 minutes). High humidity and/or low temperatures increases tack time.
4. The open time after application is 4 hours. While open, ensure that dust does not contaminate the adhesive.
5. Position the tile or plank and ensure proper alignment before application of pressure. Reposition as necessary.
6. Roll the flooring with a 100-lb. roller within 1 hour after installation to complete the bonding process.
7. After rolling, the flooring is ready for all access.
8. See note above about areas where Amtico RP-18 adhesive must be utilized.

Perimeter Option

1. Before installation, make sure the subfloor is dry and dust free.
2. This method should not be used in areas with heavy traffic, rolling loads or in any commercial application where high performance is needed. See Full Spread Option.
3. This method requires a 9" to 12" band around the perimeter room and/or every 20 ft. thereafter.
4. Pour the adhesive into a suitable container, such as a paint tray. Do not dilute the Tackifier with water.
5. Using a 16" x 16" x 16" square notched trowel or a well-soaked 1" nap roller, apply an even coat of Tackifier onto the floor to give a consistent coverage, avoiding puddling.
6. Allow the Tackifier to dry to a clear tacky film, which could take 30 minutes or longer depending on atmospheric conditions, subfloor porosity etc., before placing the tiles.
7. Lay tiles/planks carefully onto the adhesive and press into position.
8. When placing perimeter tiles into position, it is recommended that they are cut net to size such that tiles can be installed without having to apply pressure or force them into place. Tiles requiring hand cutting must be cut such that edges are vertical. This will

prevent tile edges from lifting after installation.

9. Roll the floor in two directions at right angles to each other using a 100-lb. roller with overlapping passes to ensure good contact between tiles, adhesive and substrate.

Loose Lay Option

1. No adhesive method requires RH 95% MVER 8 lbs. and pH of 10 or less.
2. This method is only for rooms less than 20 feet in any direction.
3. This method should not be used in areas with heavy traffic, rolling loads or in any commercial application where high-performance is needed. See Full Spread Option
4. Before installation, make sure the subfloor is dry and dust free.
5. Fit each plank/tile snug to the next
6. In areas of heavy foot traffic or rolling loads or in areas with extreme temperature variation, Mannington Commercial recommends the use of a full spread of the Amtico Tackifier or XpressStep LVT Adhesive.
7. Corridors do not require a perimeter glue. Simply adhere a full tile or plank across the hallway every 20 ft.
8. Once the installation is complete, roll any areas installed with adhesive with a 100-lb. roller.

SPECIAL CONSIDERATIONS

1. Radiant heat: Mixed Monolith 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. Then set the thermostat to a comfortable room temperature for the installation. For existing systems, the system must be switched off for a minimum of 48 hours before, during and 48 hours after flooring installation.
2. 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. (Not applicable for floating installation option.) 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.
3. 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 a adhesive or tacky back applied is not suitable.

MAINTENANCE PRECAUTIONS & SAFETY INFORMATION

Effective maintenance includes promptly removing all spills and then thoroughly cleaning with a diluted neutral cleaner or cleaner/maintainer solution. Failure to establish an effective routine maintenance program will not only detract from the appearance of the floor but may shorten its useful life. For complete details refer to Mannington's maintenance guidelines.

Safety first: Before commencing work, put out signs or safety cones to warn that cleaning is in progress. A slippery floor can cause accidents. Slipperiness can be caused by poor maintenance, surface contamination, spills or when the floor is wet. All hard floors can be slippery when wet. Ensure the floor is clean and dry before resuming use. Use warning signs in commercial areas when performing maintenance or cleaning spills.

For more Information, please contact Mannington Commercial Technical Services at 800.241.2262 ext. 3 or visit manningtoncommercial.com