



MILLIKEN FREE LAY INSTALLATION & INITIAL CLEANING INSTRUCTIONS

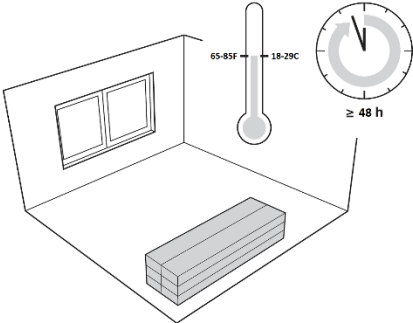
All instructions and recommendations are based on the most recent information available. They should be followed for an ideal installation. Visit our website at www.millikenfloors.com for the latest information and installation instructions.

Product Handling and Site Conditions

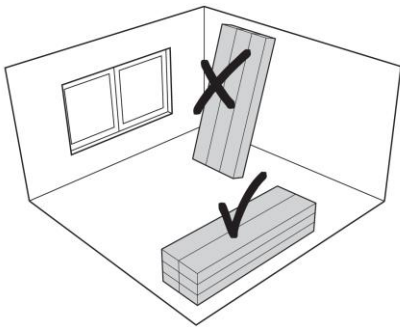
1. Store cartons of tile and/or plank with cartons stacked one on top of the other. Do not store on end or sides, or allow cartons to bend during storage or transportation.
2. **IMPORTANT:** Deliver and acclimate all material including maintenance products to job site at 65° - 85° Fahrenheit (18° to 29° Celsius) for 24 - 48 hours prior to installation.
3. The space where flooring is to be installed shall be fully enclosed and the permanent HVAC system shall be operational prior to installing flooring. The temperature shall be 65° - 85° Fahrenheit (18° to 29° Celsius) for 48 hours before installation, during installation and for 48 hours after installation. The temperature of the space shall be kept at a minimum of 65° Fahrenheit (18° Celsius) continually after installation. *Avoid dramatic and large temperature increases, and NEVER install outdoors.*
4. Free Lay vinyl floors should be protected from direct sunlight and not exposed to direct sunlight for extended periods of time. Milliken recommends suitable window coverings be in use in areas of large amounts of direct sunlight exposure. Milliken also recommends use of a full-pattern of adhesive in these areas of installation.
5. To prevent damage to the newly installed flooring the installation of flooring products should be after all other trades have completed their work. To further prevent damage after install until space is occupied, use of a reinforced fiber-based temporary floor protector product is strongly recommended.
6. To prevent problems with staining of finished flooring and the general movement of Free Lay product, areas to receive resilient flooring shall be permanently dry, clean, smooth, level and structurally sound. They shall be free of all contaminants, including but not limited to: dust, solvents, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening or parting compounds, alkaline salts, excessive carbonation or laitance, mold, mildew.

IMPORTANT

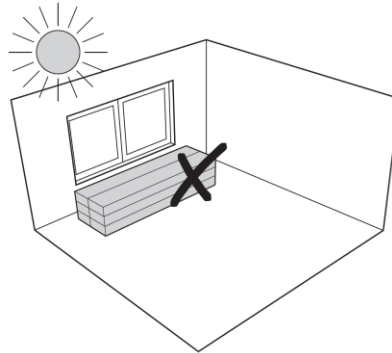
Acclimation - Store products at 65° to 85° Fahrenheit (18° to 29° Celsius) for 48 hours prior to installation



Storage – Store cartons flat, **do not stand on end**.



Do not store in direct sunlight



General Guidelines

This information provides general guidelines for Milliken Free Lay product. All instructions and recommendations should be followed for an ideal installation.

1. Install Milliken Free Lay only after the jobsite has been cleaned and cleared of debris that could potentially damage a finished plank installation.
2. Install flooring perpendicular to direct sunlight sources, including large windows, doors, etc.
3. Inspect your shipment of Milliken products to ensure that all cartons are of the same lot / manufacturing run. Contact your material provider with any discrepancies or assistance with locating this information.
4. To minimize shade variation during the installation of Milliken Free Lay LVT mix and install planks from several different cartons.
5. All subfloor/underlayment patching must be done with a non-shrinking, water-resistant Portland cement patching compound.

6. Doorways and archways must have a suitable “T” molding installed to protect the exposed edges of the flooring. Use of a 9” band of adhesive in all entryways is recommended to keep flooring from movement.
7. Adhesives used with this product must be approved by Milliken and be an acrylic base.
8. Milliken Free Lay LVT is to be installed in a perimeter fashion with Milliken full spread LVT adhesive. A band of adhesive equal to the width of one (1) row of tile or plank should be placed around the perimeter of the room.
9. **Heavy Commercial applications** or areas subjected to heavy traffic, rolling loads, etc. should be installed in a full-spread adhesive application.
10. In areas of high foot traffic, more volatile temperature variations, excessive rolling loads or if there are concerns with the subfloor conditions, it is recommended to use full spread adhesive in those areas
11. For larger areas or runs greater than 20 feet (6 meters) it is recommended to section the area into equal 10-12’ sections and utilize the perimeter-X pattern for the adhesive.
12. Any adhesive installed planks or tiles must be rolled with a 3 section 100 pound roller.

Approved Substrates

The following are approved substrates for installation of Milliken Free Lay LVT. See the next section for proper testing and substrate preparation prior to installing your Milliken floorcovering.

All substrates regardless of composition must be smooth and flat to within 1/8” (3.18mm) in 10 feet or achieve an “F50” rating by use of mechanical grinding/sanding or suitable Portland based level/patch compound.

- APA registered underlayment, sanded face exterior grade with minimum rating of C-C plugged face
- APA registered exterior grade plywood sanded face with ratings as follows: APA A-B, A-C, B-B, B-C, C-C plugged face
- Single layer Sturd-I-Floor rated panels (minimum 23/32” thickness) with sanded face. Check for jobsite damage before using as underlayment if panels were exposed to construction traffic or weather prior to installation.
- APA Rated underlayment veneer panels
- Properly prepared and well bonded existing resilient floor covering
- Cement Terrazzo, Epoxy terrazzo, ceramic tile, marble - must be properly prepared; all grouts are patched with appropriate patching compounds or leveler
- Certain metal floors - all gaps are patched with appropriate patching compounds or leveler
- Old adhesive residue- must be properly prepared with embossing leveler
- Radiant heated floors where heat does not exceed 85° F (29° C)

The following are **NOT** approved substrates for installing Milliken Luxury Vinyl Free Lay

- Rubber, cork or asphalt tiles
- Textured or cushion backed resilient flooring
- “Sleeper” floor systems
- Plywood floors that have been installed directly over a concrete slab
- Luan, OSB, particle or chip
- Masonite™ or other hardboard underlayment
- CCA (pressure treated), oil treated or other coated plywood
- CDX or other plywood with knots or open defects
- Underlayment made of pine or other soft woods
- Hardwood flooring
- Paint, wax, oil, grease, residual adhesive, mold, mildew, and other foreign materials that might prevent Free Lay planks and tiles from natural movement
- Other uneven or unstable substrates.

Subfloor Information

Although Milliken Free Lay LVT is designed to be a “Loose Lay” installation, proper preparation of the subfloor is still a major part of a successful installation. Roughness or unevenness of the subfloor may telegraph through the new Milliken Free Lay LVT, resulting in an unsightly surface and cause excessive wear on high spots.

Substrate Preparation

All substrates must be properly prepared and tested according to the following guidelines.

1. Concrete Subfloors

- a. Concrete slab construction shall be in accordance to industry standards for specification related to concrete mix design, curing methods and drying times to prevent moisture problems.
- b. On-grade and below-grade slabs should be installed with a suitable vapor retarder directly underneath the concrete slab.
- c. New concrete shall be properly cured and dried prior to the installation of floor covering. Curing agents, surface hardeners and other membranes or compounds shall be mechanically removed immediately after initial cure to allow the slab to properly dry before installation. Approximately 30 days per 1” of slab thickness.
- d. Concrete substrates should be properly prepared according to ASTM F710-11, *Preparing Concrete Floors to Receive Resilient Flooring*.

e. All concrete substrates, regardless of grade or age of slab, must be properly tested using one of the methods outlined below for warranty to apply. Acceptable test method is the ASTM F 2170 In Situ Relative Humidity. Testing shall be conducted according to the relevant ASTM documentation and instructions of the manufacturer of the testing equipment.

f. Milliken Free Lay LVT can be installed on subfloors that meet the following requirements:

For perimeter glue installation only - Up to 95% RH* of Concrete Slab per ASTM F2170

Up to 8 lbs/24 hrs/1,000ft² vapor pressure per ASTM F1869

g. Concrete Alkalinity / pH Test shall be conducted in accordance with ASTM standards and instructions provided by the adhesive manufacturer. Acceptable level of pH in the substrate is 7.

h. Surface porosity testing shall be conducted according to ASTM standards or adhesive manufacturer's guidelines. If no such guideline exists, an application of a few drops of clean, potable water shall be placed on the surface of the concrete in an area the approximate size of a dime or 5/8". If the water is absorbed within 2-3 minutes then the surface shall be deemed to be porous. If the water beads or is not absorbed then the slab shall be treated as non-porous.

2. Wood Subfloors

a. All wood substrates shall be prepared according to ASTM F1482-04 *Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring*.

b. All wood panels for use under Milliken Free Lay LVT must be smooth, flat, structurally sound and free of deflection.

c. A combination of wood subfloor and panel underlayment construction shall be a minimum of 1" in total thickness.

d. There shall be at least 18" of well-ventilated air space beneath all wood subfloors. Crawl spaces shall be insulated and protected by a suitable vapor barrier.

e. Wood subfloors installed directly on concrete or over "sleeper" joist systems are not acceptable for use under Milliken Free Lay LVT.

f. Panels designed as suitable underlayment shall be at a minimum ¼" in thickness, dimensionally stable, fully sanded face to eliminate grain texture or show through, and have a written manufacturer's warranty and installation instructions.

g. Panels shall be installed according to manufacturer's instructions regarding stapling pattern, sanding and filling of joints, and acclimation to installed environment.

h. Milliken will not cover or accept responsibility for joint telegraphing, either as a "ridge" or "valley"; grain or texture telegraphing; discoloration of finished flooring due to materials used for filling of voids and defects in the face of the underlayment.

- i. Unacceptable substrates shall be covered using a ¼” or thicker panel underlayment recommended for commercial use. Follow underlayment manufacturer’s installation instructions fully.

3. Existing Resilient Flooring

- a. When installing Milliken Free Lay LVT over existing resilient floors, the existing flooring must be:
 - i. Single layer only
 - ii. Thoroughly stripped of all wax, floor finish, dirt and other contaminants that may affect adhesive bond
 - iii. Be firmly bonded to the substrate
 - iv. Flat and smooth with no curling edges or loose seams
 - v. Dry and free from excessive moisture. All concrete floors shall be tested for moisture regardless of age or grade level. Do not assume that an existing floor is free of moisture related issues. Conduct testing per Section 1.d above.
 - vi. Must not be of a cushion back, Loose Lay, or perimeter bonded floor
- b. Milliken is not responsible for problems leading to or from indentations, telegraphing of old floor or adhesion release of old floor after the Milliken Luxury vinyl is installed.

4. Old Adhesives

- a. Adhesive residue shall be properly prepared prior to the installation of Milliken LVT. It is recommended that mechanical scraping or grinding be used as a primary means of removing old adhesive residue.
- b. Residues include, but are not limited to carpet, vinyl, VCT, and or wood flooring adhesives.
- c. Black cutback/asphalt adhesives shall be scraped by hand to remove any loose patches, trowel ridges and puddles so that only a thin residue layer remains. This layer shall then be properly covered using a Portland based level/patch compound properly mixed with the manufacturer’s recommended latex/acrylic additive.
- d. If chemical/liquid adhesive removers are utilized, the manufacturer’s recommended instructions for cleaning after use of the remover shall be followed fully. Milliken is not responsible for any adhesive failures, indentation, bubbling, or delamination of new flooring due to improper cleaning of residue left from liquid adhesive removers.

WARNING!

DO NOT SAND, DRY SWEEP, BEADBLAST, SHOTBLAST OR USE ANY OTHER MECHANICAL MEANS TO PULVERIZE EXISTING TIEL FLOORING, BACKING, LINING FELT, ASPHALTIC “CUT-BACK” OR ANY OTHER ADHESIVES. THESE PRODUCTS MAY CONTAIN ASBESTOS FIBERS AND/OR CRYSTALLINE SILICA. AVOID CREATING DUST. INHALATION OF SUCH DUST IS A CANCER AND RESPIRATORY TRAC T 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.

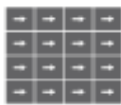
5. Other substrates

- a. Cement terrazzo, epoxy terrazzo flooring, stained or painted concrete and metal floors may be suitable for installation and need to be properly prepared for adhesion. Most will need to be prepared with a suitable Portland-based cement patching compound, see manufacturer's recommendations for use and preparation of subfloor.
- b. Ceramic, porcelain, marble and granite tiles are suitable as substrates when the following conditions are met:
 - i. Tiles must be properly bonded with intact grout joints and free of cracks
 - ii. Surface of tile and grout joints should be free from sealers, coatings, dirt and contaminants.
 - iii. Properly prepare the surface of tiles by grinding any high areas and using a suitable Portland based level/patch compound and primer to fill in all low areas. Follow leveling compound manufacturer's recommendations for surface preparation and application of product.
- c. The following are **not** suitable substrates for installation of Milliken LVT: rubber, cork, or asphalt tiles; and any other material covered in the sections above and listed as unsuitable.
- d. Unsuitable substrates should be covered with an approved ¼" wood underlayment or suitable Portland based level/patch compound. Always follow the manufacturer's recommended practices when covering an existing substrate.

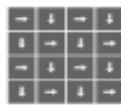
Installing Milliken Free Lay LVT

Installation Methods

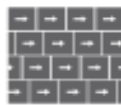
36" x 36"



Monolithic



Quarter Turn

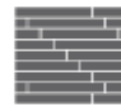


Brick Ashlar

Planks



Herringbone



Traditional

1. General

- a. When using more than one carton, ensure that the cartons are all the same run / lot number. Different lots may have a variation in color, texture or gloss so they should not be mixed in the same room. **Contact your Milliken representative before installing product from differing runs or lots.**

- b. Milliken plank simulates wood planks, and can be installed in the same pattern as a wood plank floor in a random pattern, staggered design, diagonally or other design.
- c. Planks are best in appearance when lying parallel to the longest walls in the room.
- d. Milliken Free Lay flooring can be cut using a tile cutter or a utility knife. Keep knife blades sharp for easy, accurate and safe cuts. Fit planks to walls, columns, door jambs, etc. using the same methods as with other floor tiles; overlap, pattern scribe, wall scribe and free hand.
- e. When working on top of Free Lay LVT during the installation, be sure to not disturb tiles and planks that have already been laid. If a piece does become dislodged simply peel it up and reinstall; use of a scrap piece as a tapping block can help readjust disturbed tiles and planks.
- f. If it is necessary to heat the planks to achieve a cut, heat slightly from the back only with minimal heat setting (a standard hair dryer will produce enough heat). Carefully make cuts with a sharp utility knife on the heated plank.

2. Milliken approved trowel-grade adhesive installation method

- a. Milliken approved adhesives are designed to be used on most interior installations over most concrete and wood substrates, and other approved substrates that are properly prepared and leveled.
- b. Some commercial applications and special substrates a two-part epoxy or urethane adhesive is recommended. Typical applications for these types of adhesives are wet areas, floors subjected to heavy point loads and/or rolling loads, and floors that will be exposed to extreme temperature changes or extreme temperatures.
- c. If it is determined that a non-Milliken approved adhesive is to be used on an installation, Milliken recommends a written warranty be obtained by the adhesive manufacturer warranting this specific installation with their products.
- d. Porous substrate installation, requires a trowel notch of 1/16" x 1/32" x 1/32" u-notch be used. The adhesive should be allowed to dry to the touch sufficient to prevent slippage. Loss of adhesion can result if the flooring is not installed within the working time of the adhesive.
- e. Non-porous installation, requires a trowel notch of 1/16" x 1/32" x 1/32" U-be used.

Use of non-Milliken adhesives does not affect LVT product warranties, however, any claim related to adhesive performance or workmanship and any damage caused by this would be the total responsibility of the party responsible for using the non-recommended product.

3. Layout

- a. Determine the center of the room and dry lay a section of tile/plank from the center line to one wall to determine that the pattern is centered and fit. Measure the border cuts along the wall and compare to the following criteria. If necessary adjust the first row at the centerline to meet either the plank or tile
- b. Planks should never be less than 9 inches long or less than half of the width of the plank. Avoid small pieces in border areas and adjust the center lines to achieve the proper pattern.
- c. Tiles should not be less than 6" in length or width. Avoid small pieces in border areas and adjust the center to achieve the proper pattern

- d. Tiles are designed to be laid in any fashion with the most popular being point-to-point and ashlar patterns. All tile sizes and patterns look best when the layout is balanced in the installed room.

4. Installation of flooring

Spread adhesives using the proper trowel notch; more adhesive is not a good thing with LVT products.

- a. Before spreading adhesive, strike a parallel chalk line to the centerline of the length of the room approximately 2' to 3' from the wall. Actual position is to be determined by the layout of the planks, ensure that the pattern is followed from your initial starting point determined in the dry layout performed earlier. If necessary, re-lay part of the pattern from centerline starting point to determine the exact measurement of the parallel line.
- b. After determining the starting point, apply adhesive in a band the same width of plank or tile along the starter wall and down the side walls, keeping in mind the open time for the adhesive on the side walls. Allow to tack up. Some slippage of the plank/tile may occur with a "wet" method. Be careful to follow layout lines and allow adhesive to set before rolling.
- c. Begin installing the first row of flooring into the adhesive, keeping 1/8" gap along all vertical surfaces. Install the flooring by tightly butting the edges of the pieces together, making sure that the runs are parallel to your centerline or layout lines. Work toward the first wall from your starting line into the band of adhesive.
- d. Once your starter rows are secure and the flooring planks/tiles are tightly butted together, continue applying adhesive along the perimeter of the adjacent walls so that enough flooring can be placed within the working time of the adhesive. Milliken recommends an additional "X" pattern be placed corner-to-corner if the space is greater than 20 feet (6 meters).
- e. Start installing the next rows by continuing the pattern and tightly butting all joints together. A scrap piece of flooring can be used to lightly tap the pieces into the previous row.
- f. Continue in this manner spreading only enough adhesive along the perimeter that can be safely installed within the working time of the adhesive.
- g. Be sure to stagger all end joints by at least 6" or the width of one plank. Vary the length of your planks during installation to ensure that end joints are not bunched and a randomness is achieved in the pattern.
- h. During installation, roll the areas of the floor that are utilizing adhesive with a 3-section 100 lb. roller to ensure proper transference of adhesive to the plank backing.

After Installation

- i. Be sure planks are set, flat and have tight edges. Re-roll the entire installation along the perimeter and any area where adhesive is used with a 3-section 100 lb. roller to ensure all planks are properly set into the adhesive. If necessary, weigh down any loose planks overnight to ensure bond. Adhesive can be carefully reactivated using a heat gun after drying to re-install planks.
- ii. Clean adhesive residue from the face of the flooring following these directions:

- a. Wet adhesive residue on the surface of the planks can be cleaned with a clean, white cloth **dampened** with warm, soapy water. Do not use excess water as this can seep between the seams of planks and lead to an adhesion failure!
- b. Dry adhesive residue can be cleaned with mineral spirits or denatured alcohol and a clean cloth in a sparingly manner. Carefully follow the directions on the mineral spirits container. Please note: improper use of any chemical can harm the finish of the Milliken Luxury Vinyl Flooring product.
- c. Do not pour soapy water, mineral spirits or denatured alcohol directly on the Milliken Luxury Vinyl Flooring.
- d. If working with epoxy or urethane adhesives you must clean these up while wet according to the adhesive manufacturer's instructions, which can be generally found on the container label.
- e. In the event that the Milliken LVT is not the last portion of the construction project, the floor must be protected from construction traffic and damage. Wait 24 hours and utilize a reinforced fiber protective board or a heavy Kraft paper (min. 60 lbs.) and cover the floor. Failure to wait 24 hours before covering can impact adhesive curing.

Initial maintenance

- Wait 7 days after installation is completed and thoroughly clean the floor using a neutral pH cleaner
- If necessary, a slow (175rpm) buffer can be utilized with a white, non-abrasive pad to remove heavier deposits
- Rinse the floor thoroughly and allow to dry.